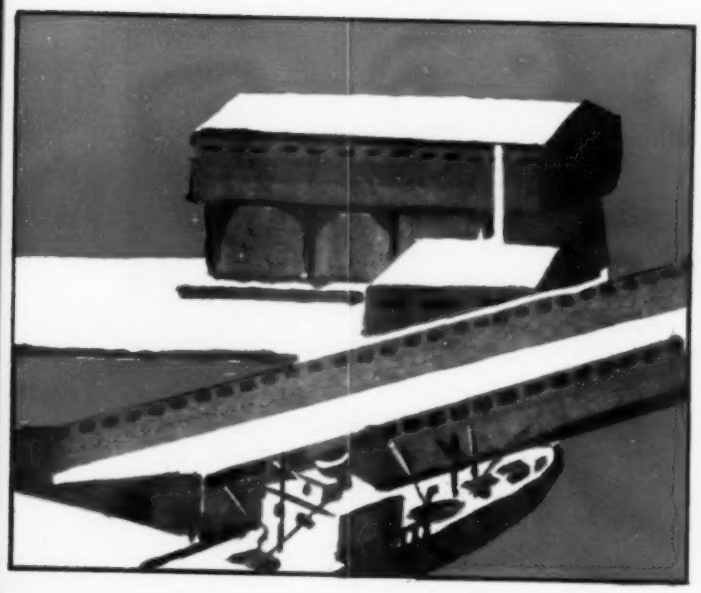
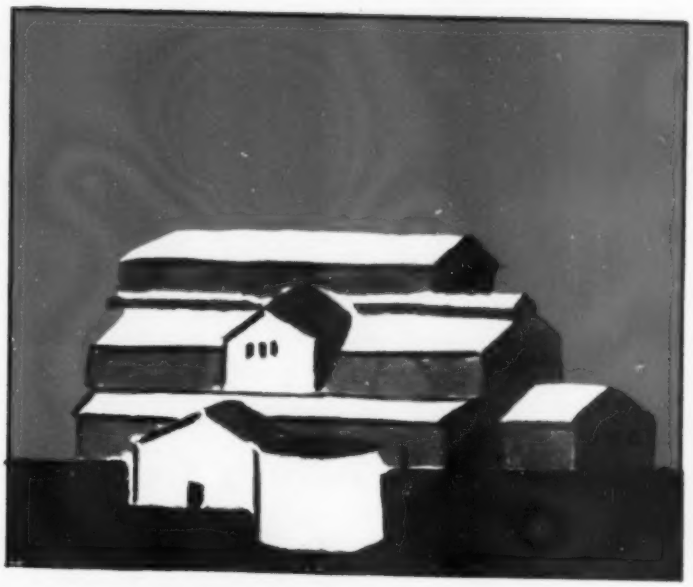
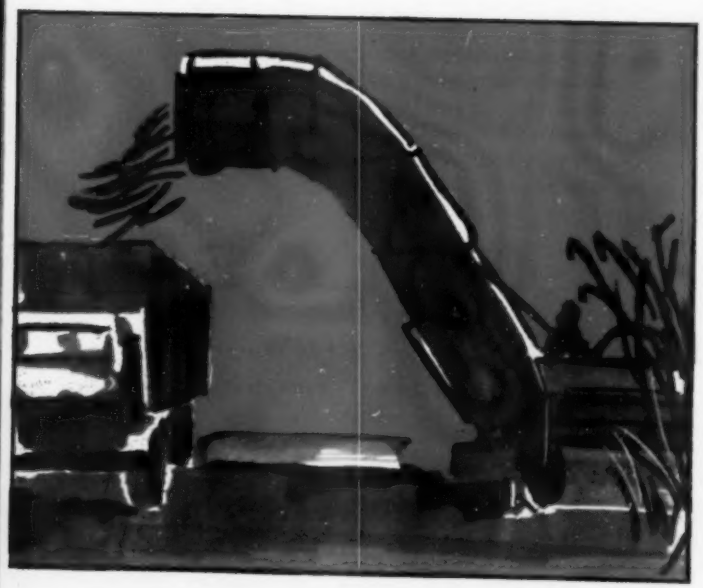
SUGAR Y AZUCAR

NOVEMBER 1961







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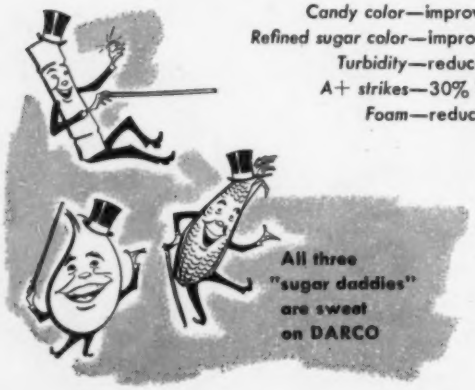

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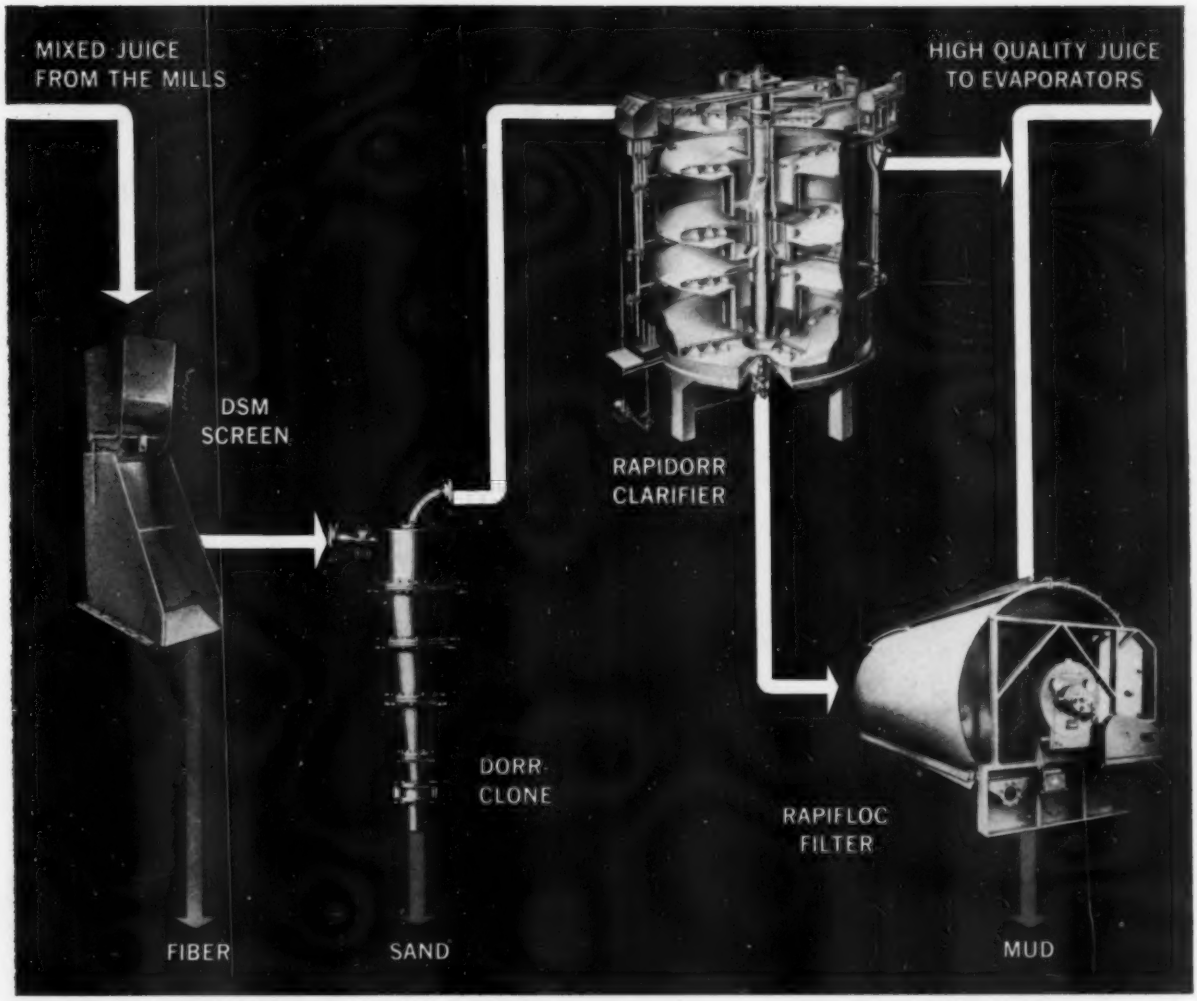

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SUGAR y AZUCAR

Volume 56 No. 11 November 1961

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COVER *This month's front cover design suggests a few of the outstanding technological advances developed by the Hawaiian sugar industry. Editorially, the issue features the Annual Meeting of the Hawaiian Sugar Technologists being held on Oahu, November 13-17. Recognized throughout the sugar world for its contributions to the development of bulk raw sugar handling, mechanical harvesting, improvements in processing and in agricultural practices, the Island industry has leaned heavily on the Hawaiian Sugar Technologists as individuals and as the organization that has served the industry for fifty-nine years.*

PORTADA *Nuestra primera página presenta un sugestivo diseño sobre algunos destacados progresos tecnológicos desarrollados por la industria azucarera Hawaiiana. Editorialmente, ésta edición informa sobre la Sesión Anual de los Tecnólogos Azucareros de Hawaii, la cual se celebrará en Oahu desde el 13 al 17 de Noviembre. Esta importante entidad técnica, reconocida a través de todo el mundo por sus valiosas contribuciones sobre el manejo de azúcares crudos a granel, la cosecha mecánica y las operaciones tanto agrícolas como del proceso de elaboración; ha sido el mas eficaz apoyo en que se ha sustentado la industria azucarera de Hawaii, a la cual ha servido durante cincuenta y nueve años.*

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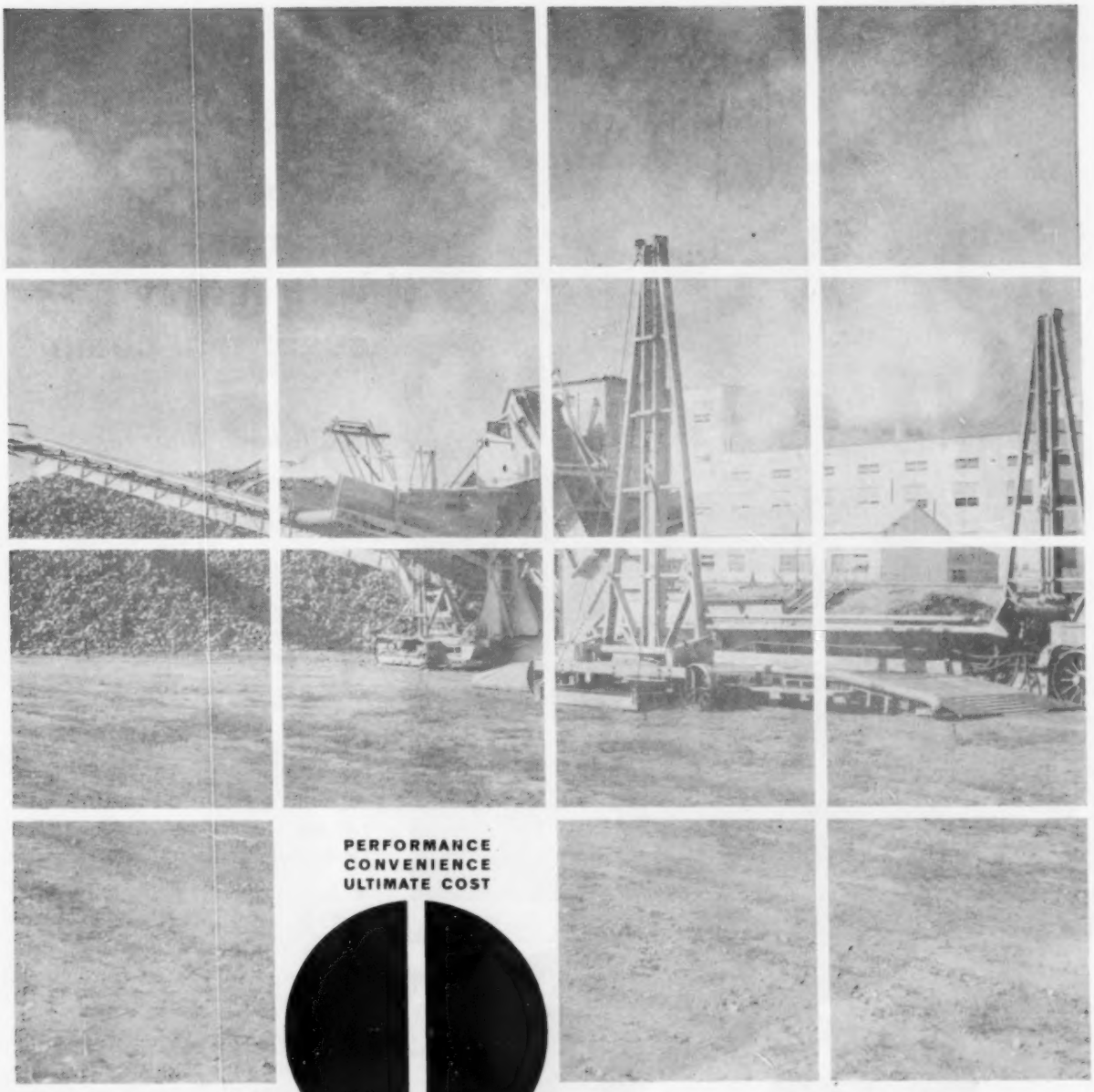

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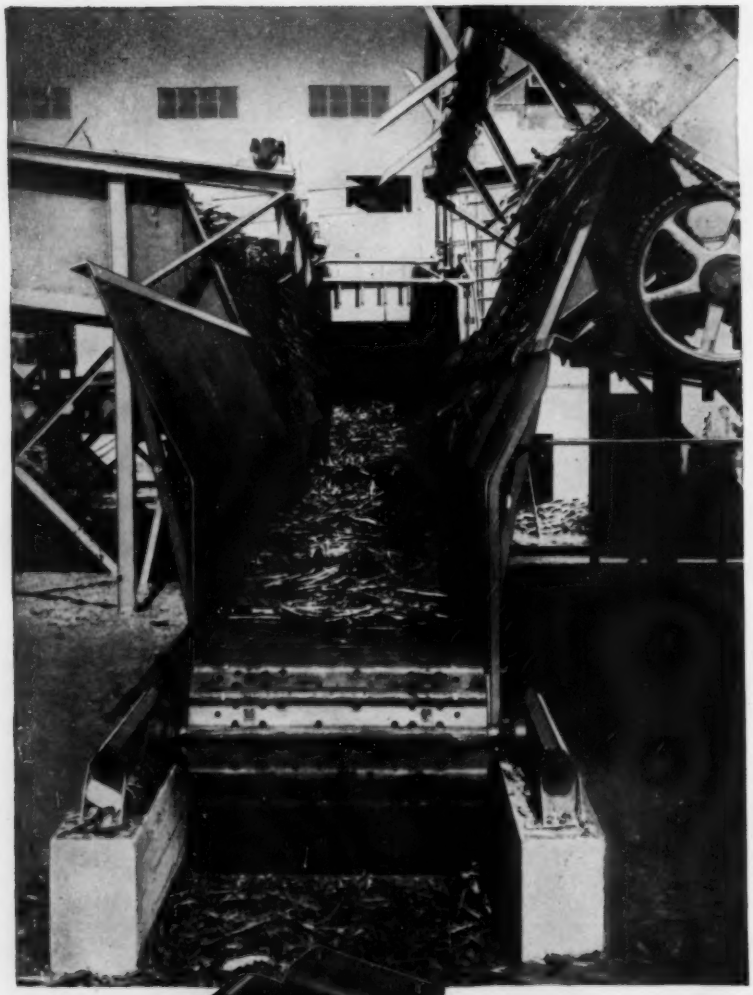

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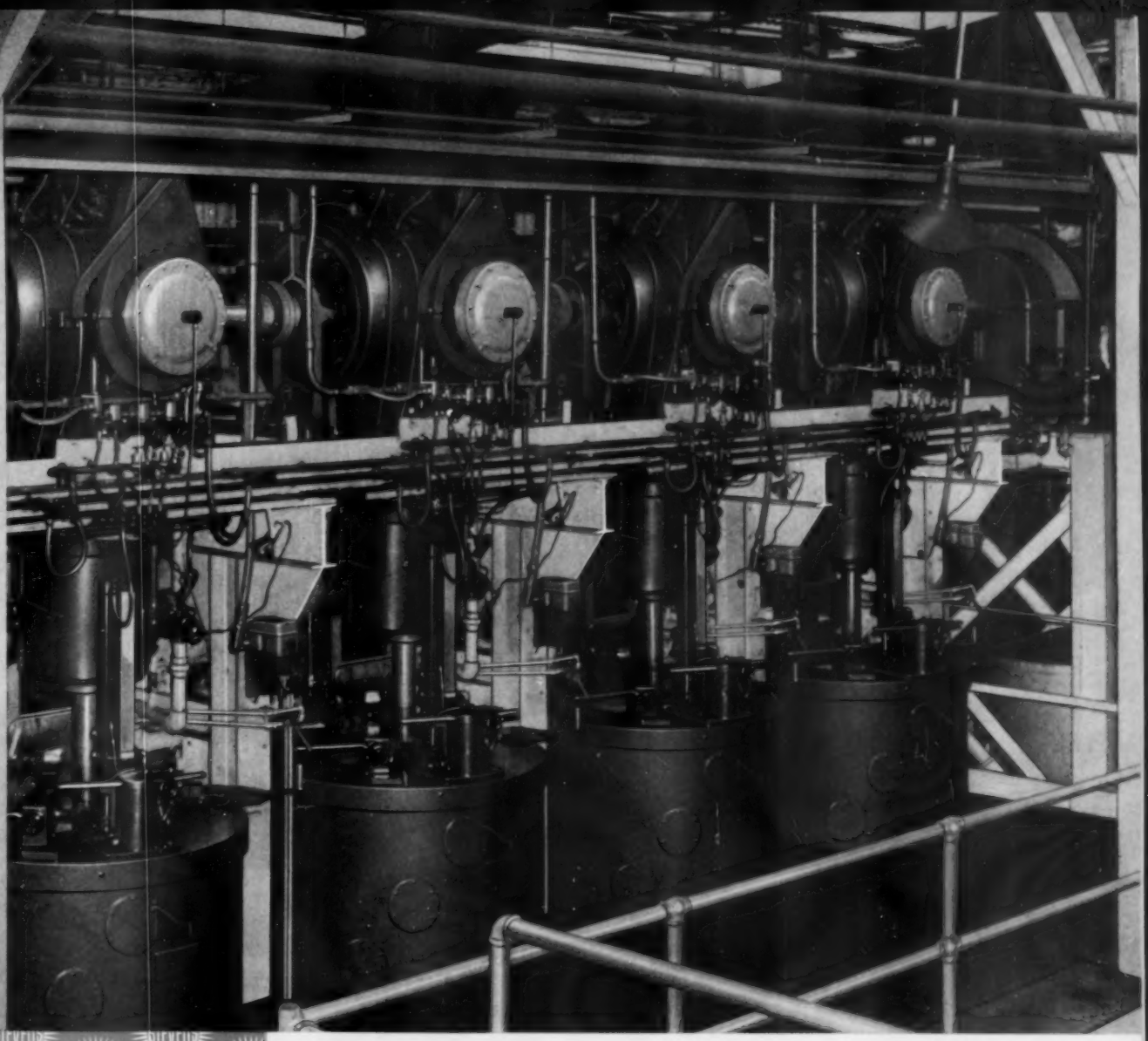

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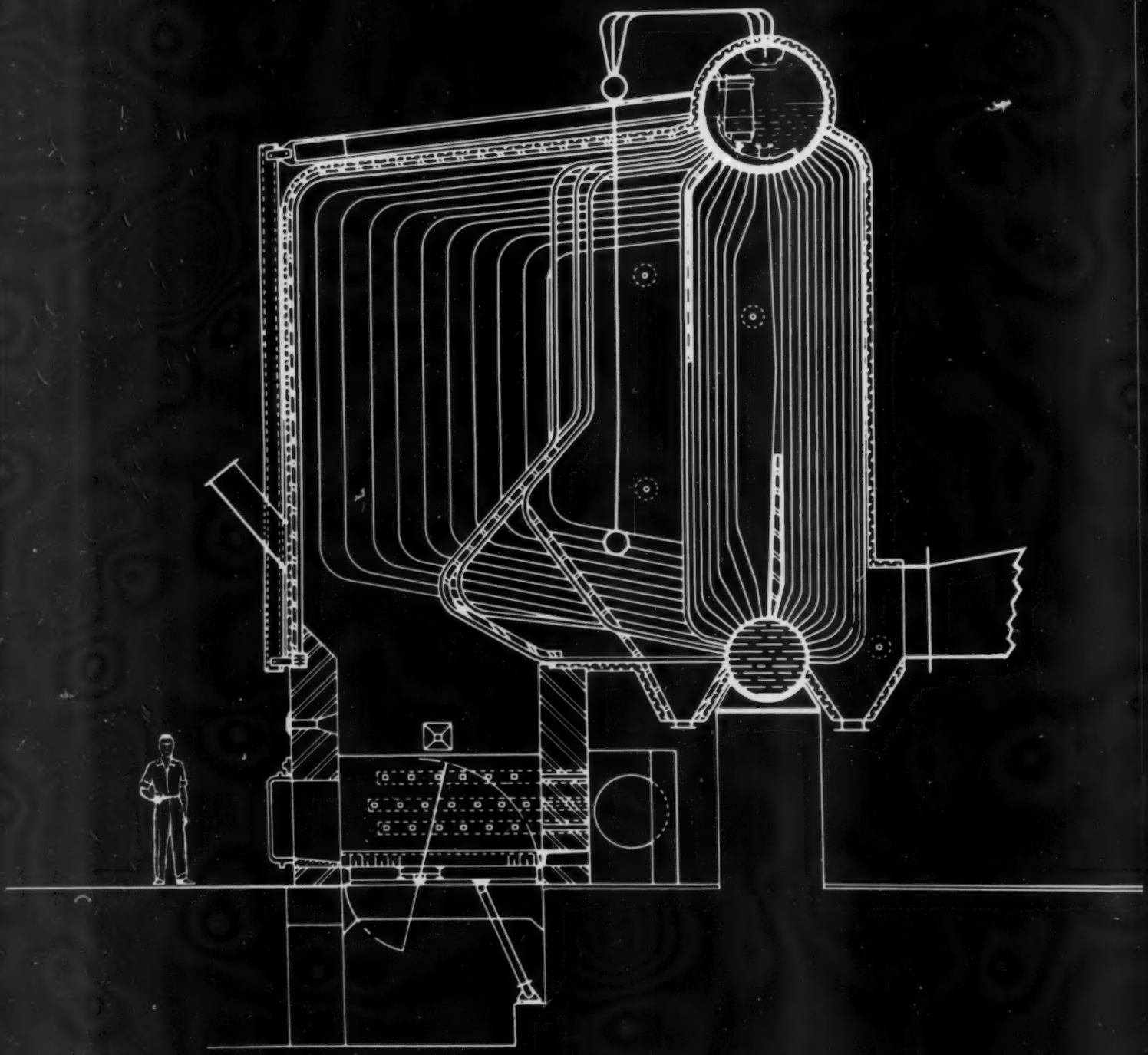

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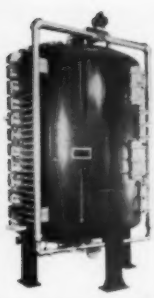

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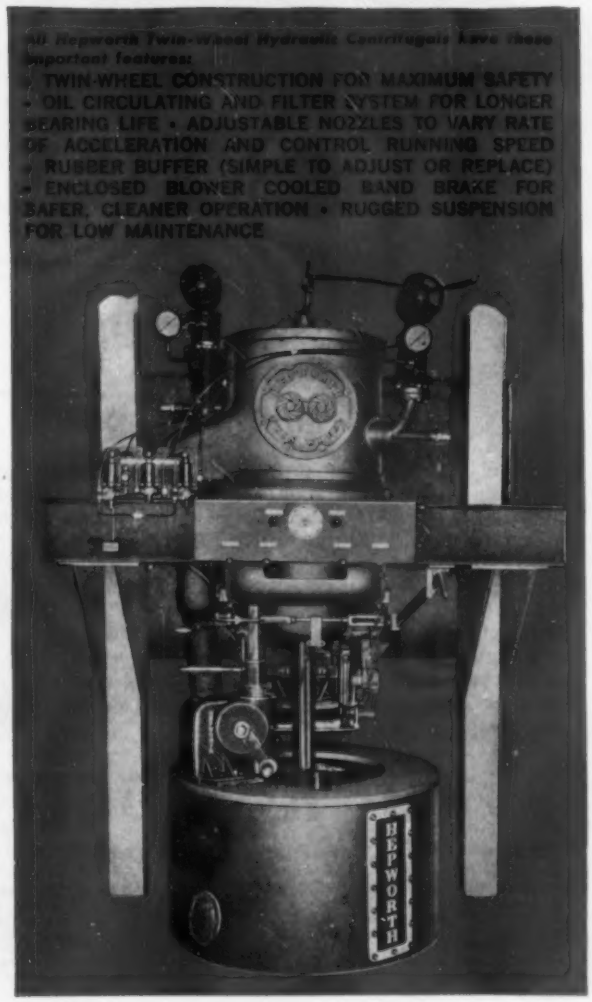

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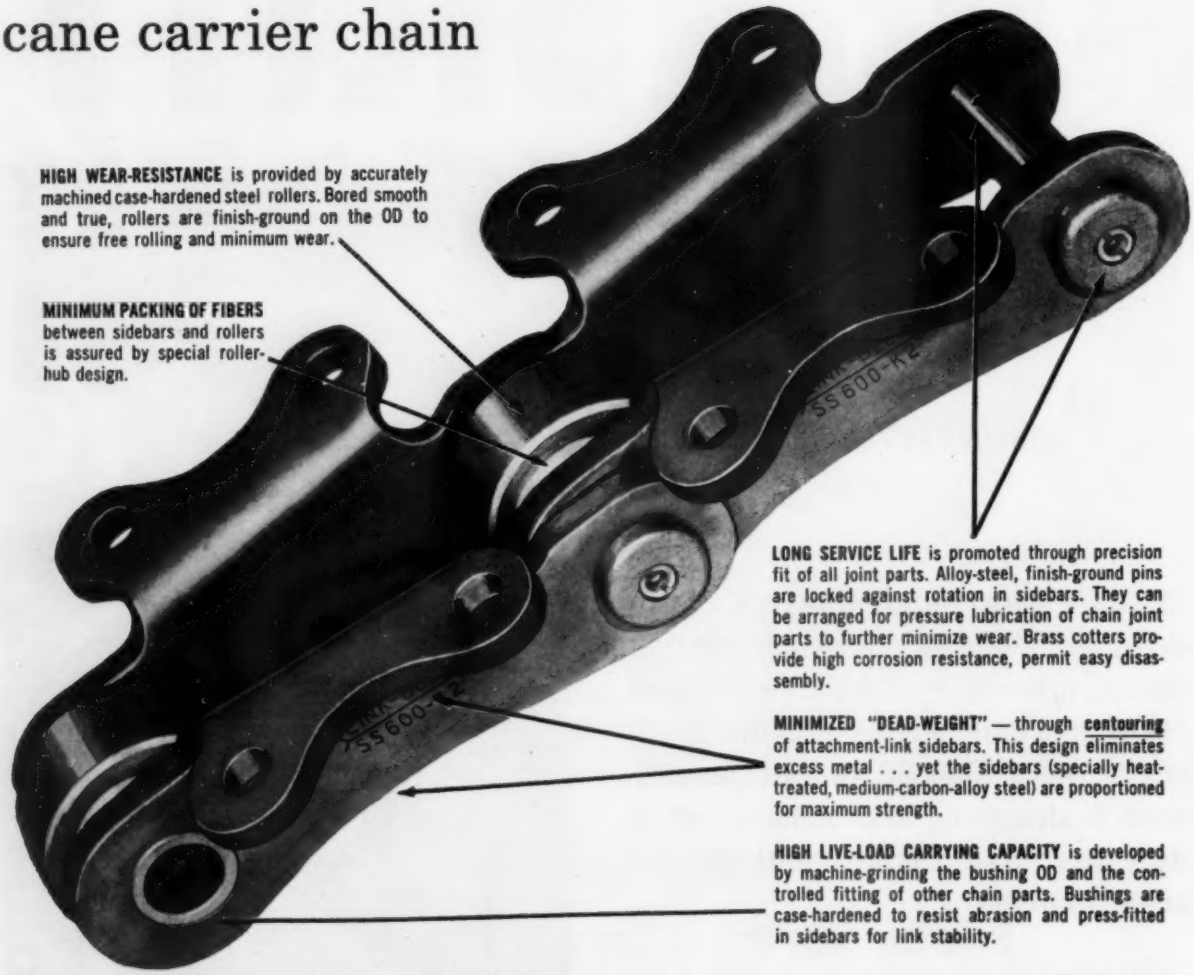

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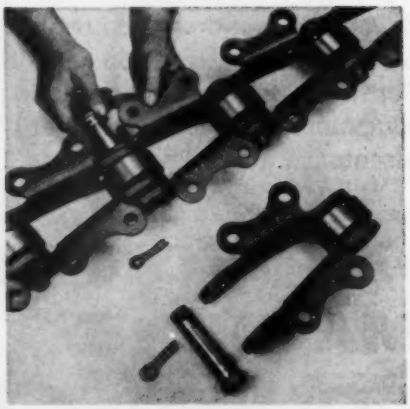

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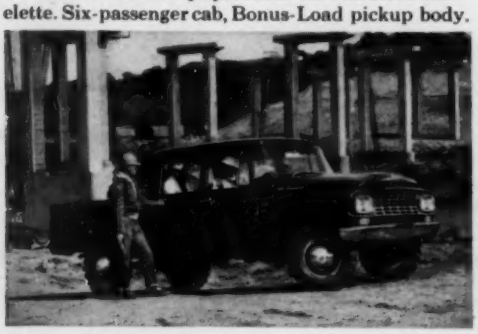

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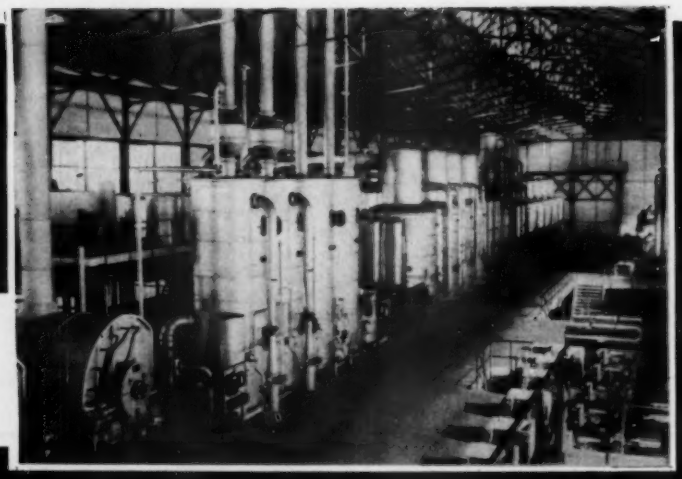

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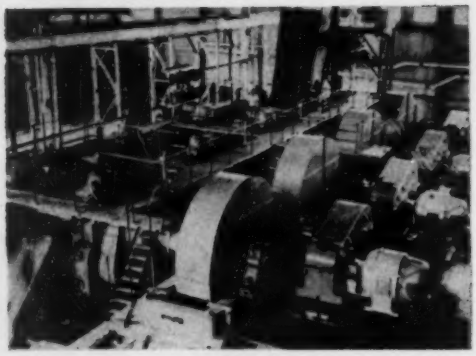

1800 kW turbo-alternator.
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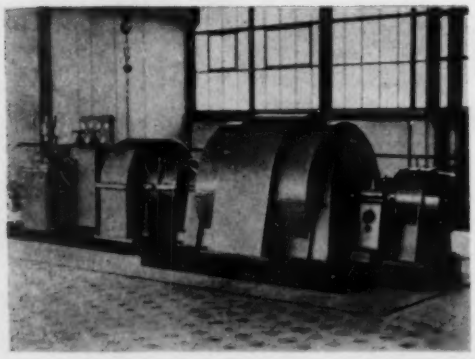

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EUROPEAN News & Notes

By our London Correspondent

It is somewhat early to discuss the UK 1961 sugar beet crop as a whole but reports by mid-September were that root weights were still substantially behind those recorded in the corresponding weeks of 1960. Nevertheless, reliable opinion was that the crop will be above the average for the last five years.

Average results of field tests for the first four weeks of the 1961 crop season, and the corresponding 1960 average, were as follows:

UK Sugar Beet Crop 1961 and 1960

	Root wt Gr	Sugar content %	Sugar in root Gr
	Average Aug. 19 to Sept. 9		
1961	464.0	14.02	65.5
1960	572.5	13.96	80.0

"Sugar Board Annual Report: Year to 30 June 1961" summarizes its financial results as follows:

(a) a deficit of £25.5 million *(compared with £27.7 million deficit in 1959-60)* on the purchase and resale of 1.5 million tons of Commonwealth sugar costing £65.9 million;

(b) a payment of just over £15.5 million *(£11.7 million)* to the British Sugar Corportation Ltd. for the year to 31 March, 1961 representing the record production of over 900,000 tons of sugar (in terms of raws); and

(c) net receipts of surcharge of £41.7 million *(£39.6 million)*.

This leaves, after charging interest and administration expenses of £0.4 million *(same)*, an excess of income over outgoings during the year of £0.3 million to be deducted from the under-recovery of just over £7 million brought forward from 30 June, 1960. There is thus a net under-recovery of £6.7 million to be carried forward to the next accounting period. The figure of under-recovery is well within the £25 million limit which the board are authorized under the Sugar Act to borrow.

The quantity of negotiated price quota sugar acquired was less than a full year's negotiated price quota, mainly because, on account of the 1960 cyclones, Mauritius shipments for 1960 fell short of her quota and practically no sugar was available for shipment from that source in the first half of 1961. On the other hand, the quantity of British Sugar Corporation's production was a record.

"Sugar Year Book 1960," the fourteenth issue by the International Sugar Council, makes its welcome appearance. A surprising wealth of information is collated into pocket size. As a handy source of data, covering in most cases the years 1954 to 1960, on centrifugal sugar production, imports, exports, consumption and stocks, the section covering 89 countries is unsurpassed.

There is also a 70-page "general table" section covering world statistics and data of a wide range, including export quotas under various agreements and a list of equivalent weights and measures which can solve many an odd query.

The price is 20s and copies are available from the ISC at 28 Haymarket, London, SW 1.

Speaking at the recent annual meeting in Dublin of **Irish Sugar Co. Ltd.,** the following figures were given by the chairman —J. E. MacEllin—as summing up the last two years' crop results:

	1960	1959
Acreage grown	67,553	68,454
Beet delivered, tons	935,245	927,349
Average yield, tons/acre	13.84	13.55
Average sugar content % of beet	15.12	16.23
Total cost of beet delivered factories, £ million	6.1	6.6
Average value/acre excluding by-products	£90 3s 6d	£95 17s 2d
Average tare % of beet	19.24	9.9
Cwt white sugar per acre of beet	35.6	37.6

Despite increased beet tonnage, overall sugar production fell to 120,406 tons last season from 128,791 tons in 1959/60.

Because of very bad weather beet supplies were critical throughout the campaign, but despite all difficulties technical performance remained very high and the following are the significant figures for the last seasons:

	Season 1960	Season 1959
Beet sugar produced, tons	120,406	128,791
% sugar in beet recovered as white sugar	85.12	85.5
Total daily throughput of 4 factories (tons of beet)	10,349	10,592
Slicing days per 100,000 tons beet	9.5	9.4
Average number of slicing days	90.6	87.5

Home and export sales totalled 159,781 tons in the year ended April 30, 1961 against 155,002 tons and 143,513 tons respectively in the two preceding years, and average receipts per ton in these years were: 1960/61 —£55 14s 0d; 1959/60—£55 12s 11d; and 1958/59—£57 14s 10d.

Another company whose annual report and accounts were issued in September was **Sir J. L. Hulett & Sons Ltd.** As usual, this is highly informative, well illustrated in color, and in English and Afrikaans. This year, in addition, it includes an article—"The Ngoye Story"—giving an interesting account of the very successful development of Ngoye paper mill in Natal as an outlet for the company's sugar cane fibre, previously used as furnace fuel.

Finances for the year ended April 30, 1961 are in rands, since in February 1961 South Africa adopted a decimal currency system with the rand, equal to 10s in the old coinage, as the new currency unit.

The consolidated accounts show trading profit after all charges at R5,466,665 *(against R2,528,346 in 1959/60)*; net profit before taxation, R5,528,346 *(R2,767,564)*; and net profit after taxation, R4,406,195 *(R1,959,056)*. R2,807,095 *(R511,186)* is transferred to reserves, and unappropriated profits carried forward total R648,485 *(R652,162)*. Total dividend paid is 55 cents or 11% *(50 cents—10%)*, the final being paid on the new increased capital. Group capital commitments not provided for in the accounts total R2,830,119 *(R820,780)*.

Further group expansion since the close of the financial year is reported. Full control has been acquired of Refineries Investments (Pty) Ltd. and this company, which previously held a 40% interest in Refined Sugars & Syrups S.A. (Pty) Ltd. (makers of prepacked sugars), has acquired the balance of the share capital. Thus Refined

Sugars & Syrups, and its subsidiary, Geo. Clark & Son (S.A.) (Pty) Ltd. (makers of specialty sugars), become wholly-owned Hulett subsidiaries.

Antigua Sugar Factory Ltd. announces that William Arthur du Buisson has been appointed Chairman in place of Mark S. Moody Stuart, who has retired but who remains on the board. George H. Moody Stuart has been made a director following the resignation of James M. du Buisson.

Booker Brothers, McConnell & Co. Ltd. terms its one-for-eight "rights" share issue an "overwhelming success," about 96% having been taken up by shareholders. The board has since announced that as this reduced unissued capital of £97,000 it is proposed to increase the authorized ordinary capital by £1 million to £7 million. There is no intention, however, of making any further ordinary share issue at present.

The group continues to expand and its Canadian subsidiary, Prairie Pacific Distributors, has agreed with the board of Canadian Electronics that the latter should join the Booker group in Canada as a wholly-owned Prairie subsidiary.

Accounts of **Demerara Co., Ltd.** for the year 1960 show a group surplus after all charges and taxation of £304,680, against £275,969 in 1959, and the total dividend paid is raised to 8½d per share from the equivalent of 7½d. Balance carried forward is increased to £147,243 from £101,625.

In his review at the annual meeting in London, the chairman—D. A. C. W. Parker—gave the following estate and factory figures:

Year	Total Crop Tons	Total sugar/acre Diamond	Leonora
1960	62,850	3.84	4.14
1959	51,957	3.51	3.93
1958	54,004	3.94	4.03

The crop was a new high record and the whole of the sugar was sold, some to the U. S. for the first time. As sugar is now grown on virtually all suitable land in the company's occupation, the only way output can be increased is by higher yield per acre, which the company is always striving to achieve, or by grinding cane grown on land owned by farmers which is close enough to make transport to company factories practicable. This idea has been examined by the Department of Agriculture and it is hoped to start carrying it out soon.

Trinidad Sugar Estates Ltd. has paid a further special interim capital dividend of 4s 0d per share, taxfree, out of the proceeds from its sale of surplus lands. This makes a total payment of 5s 3d per share from this source since the initial distribution last March.

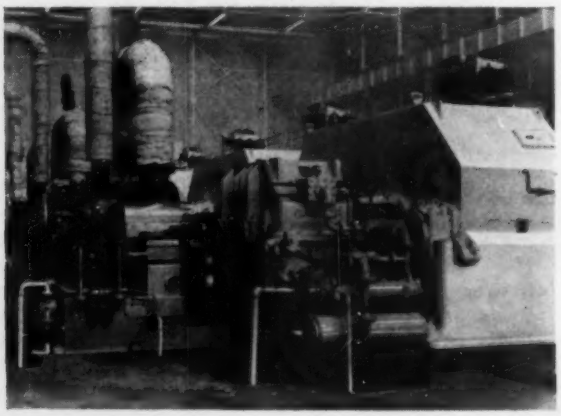
It is also announced that a firm of planning architects has been instructed to make a complete survey of the estates, including both sugar and surplus lands, in order that the company may be advised as to the best use of the land in the future.

Francis W. Douse, chairman of the **Anglo-Ceylon & General Estates Co. Ltd.,** reported in August that in Mauritius during the current year there has been no damage suffered by cyclones and there are indications of a normal sugar crop.

The company also has extensive interests in Ceylon in tea and other products and the accounts issued recently show group trading profits for the year ended March 31, 1961, of £1,126,230, against £1,227,814 in 1959/60, and group net profit after all charges and taxation of £524,374 against £601,176. Net profit applicable to the company was £379,769 against £462,709. Total dividend is maintained at 2s per 5s stock unit, and carry-forward is £308,572 against £306,003 brought in.

The chairman reports that, following the two disastrous cyclones early in 1960, the sugar crop of the Island of Mauritius for the 1960/61 season was only 235,600 tons, compared with 580,000 tons in 1959/60. The company's crop, including that of Mon Tresor & Mon Desert Ltd. was 22,829 against 70,900 tons. The catastrophe suffered by the Island was the worst since 1945.

The price fixed under the Commonwealth Sugar Agreement was £44 8s 10d per ton compared with £45 2s 0d the previous year.



Steam Turbines for the Sugar Industry

One of a number of Brotherhood Steam Turbines installed in a Swaziland sugar factory.
A battery of 6—550 B.H.P. 31" Brotherhood Horizontal Single Stage Impulse Steam Turbines built to the order of George Fletcher & Co. Limited, Derby and shipped to South Africa.
These turbines are working 24 hours per day for 9 months of the year driving a Sugar Cane Mill for the Mhlume Sugar Co. Limited, Swaziland.

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P.6497

SUGAR *Machinery*

The illustration shows a modern 15 Roller 35" x 72" Sugar Cane Milling Plant with individual Turbine Drives recently supplied to Deep River Beau Champ Ltd., Mauritius. The average grinding capacity figure for the 1958 crop was 103 tons canes per hour. Extraction 96.2%. Cane fibre content 12.5%.

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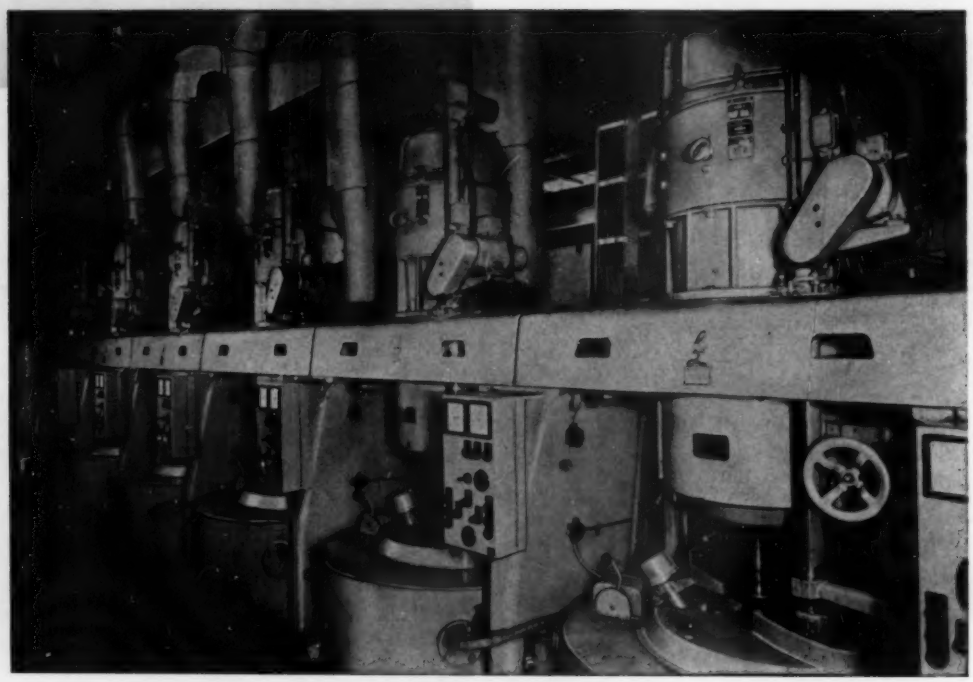
recycling centrifugals

– for all grades of massecuite



A typical ASEA-LANDSVERK fully automatic centrifugal battery delivered to the Raffinerie Tirlemontoise, Belgium.

- Standardised transductor-controlled Leonard drive.
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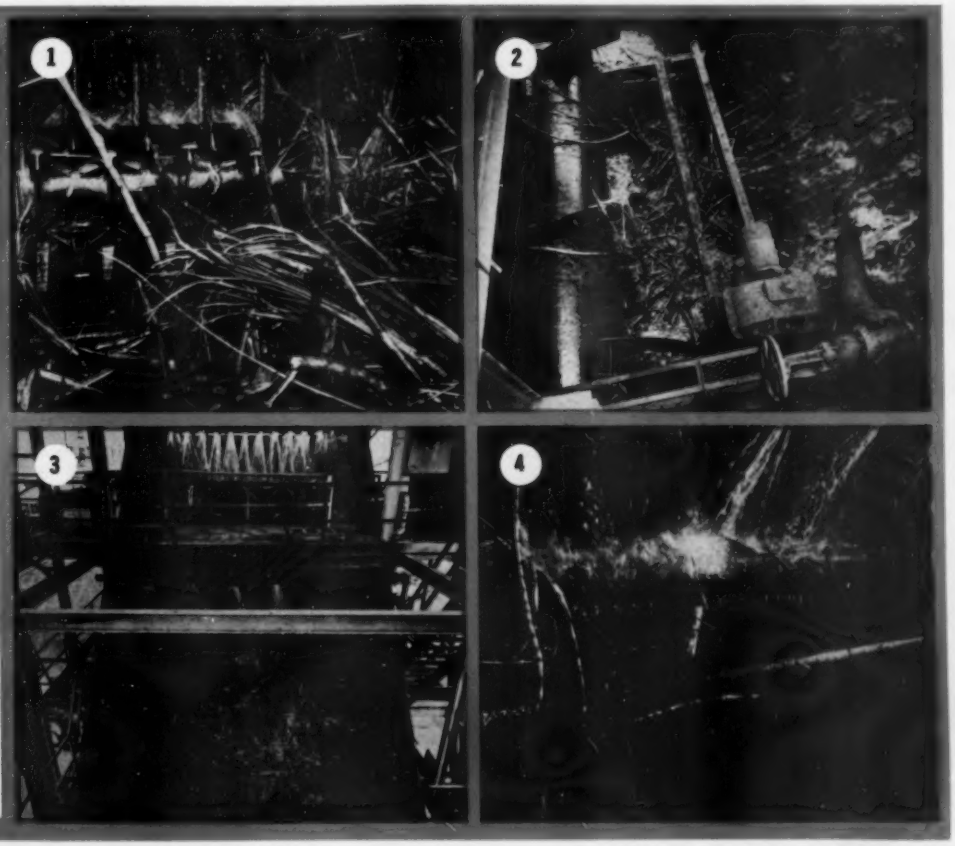
4. Cane is detrashed and is given a final rinse.



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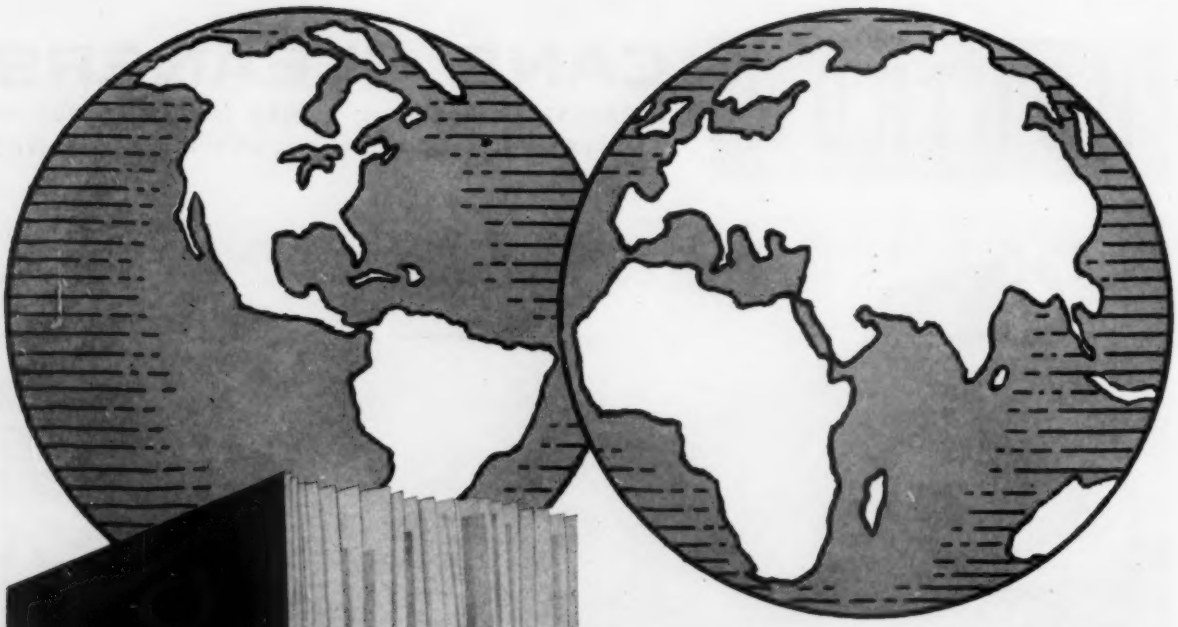
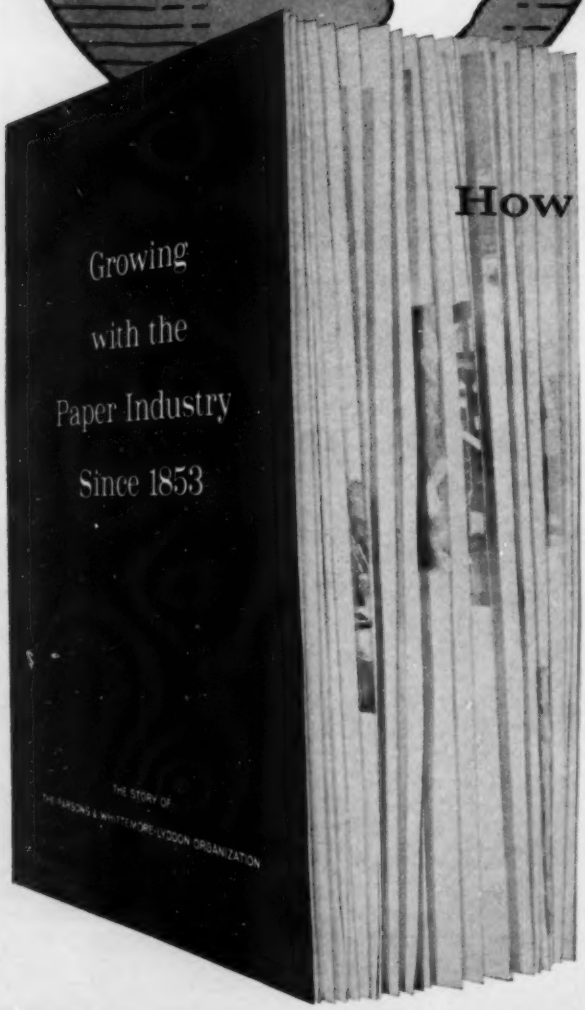
HONOLULU IRON WORKS





How Parsons & Whittemore develops Pulp and Paper Mill projects around the world

Business executives, industrialists and government officials often request information concerning the facilities and services of the Parsons & Whittemore/ Lyddon Organization.

To meet requests for such data, we have published a new, 40-page brochure which outlines the world-wide technical, financial, engineering and machinery-manufacturing facilities of the Organization. The booklet, which should prove especially valuable to those seeking to establish a paper industry in newly-developing countries, describes 25 pulp and paper mill projects recently completed or in course of completion, on four continents, using twelve different raw materials.

We shall be pleased to send you a free copy of "Growing with the Paper Industry Since 1853." Address your request to any of our offices listed below.

THE PARSONS & WHITTEMORE–LYDDON ORGANIZATION

World leaders in the development of pulp and paper mills for the use of local fibers

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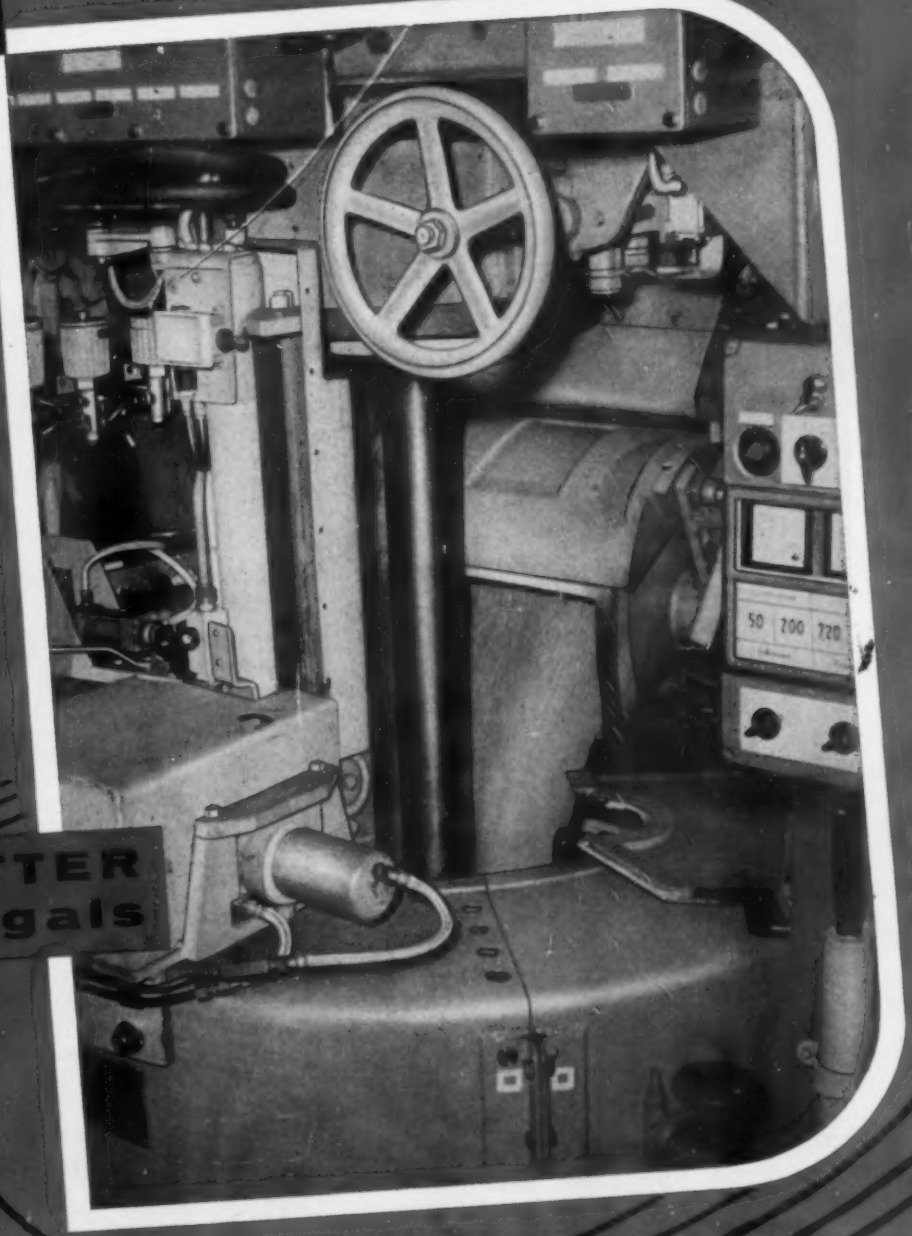
SMG



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MIRRLEES VACUUM PANS GIVE EVEN DISTRIBUTION OF STEAM, GOOD DRAINAGE, AND EFFICIENT ENTRAINMENT PREVENTION. THEY ARE MANUFACTURED IN STREAM FLOW, LOW HEAD OR DUPLEX TYPES.

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TURBINE DRIVES FOR CANE KNIVES

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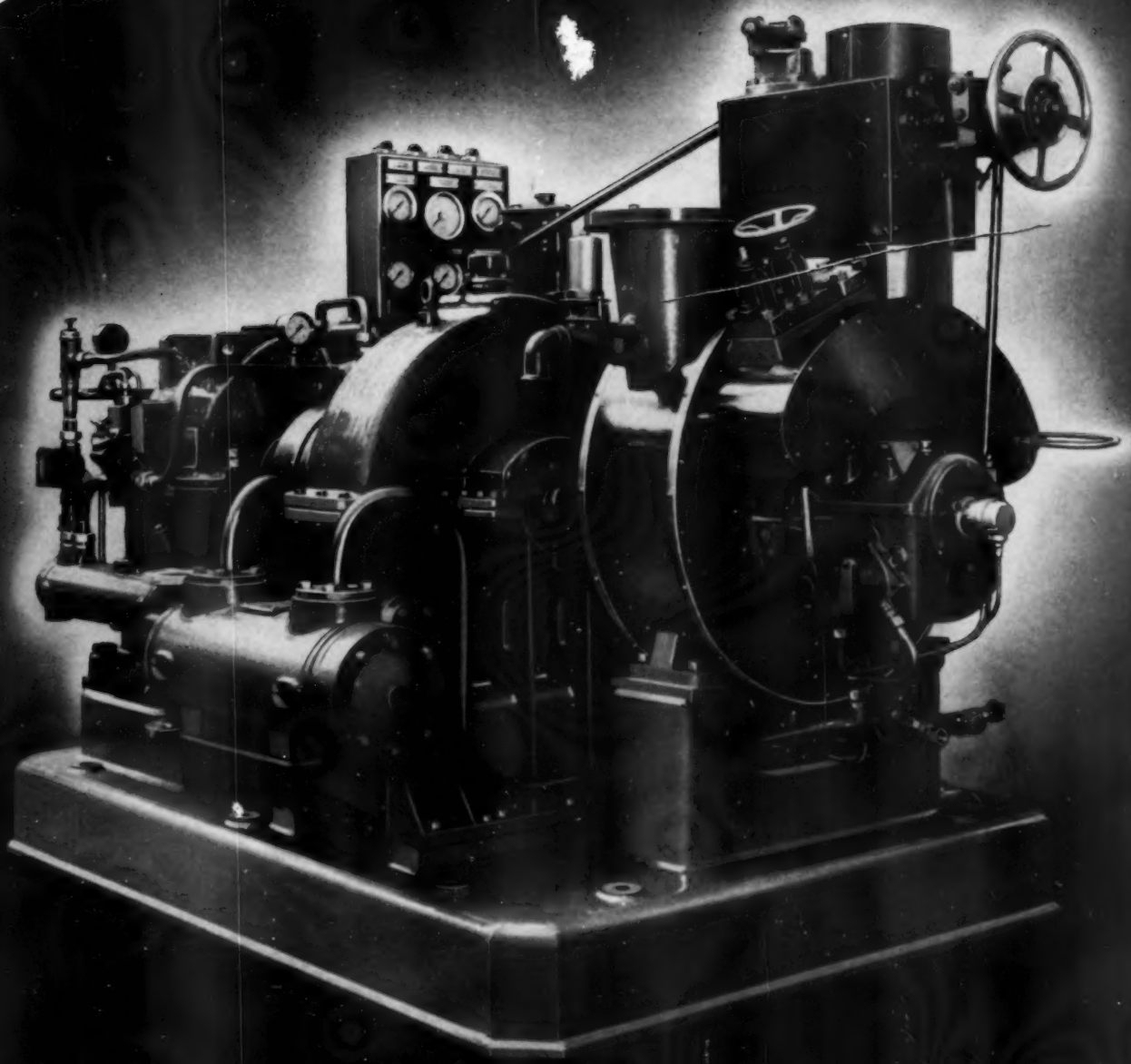

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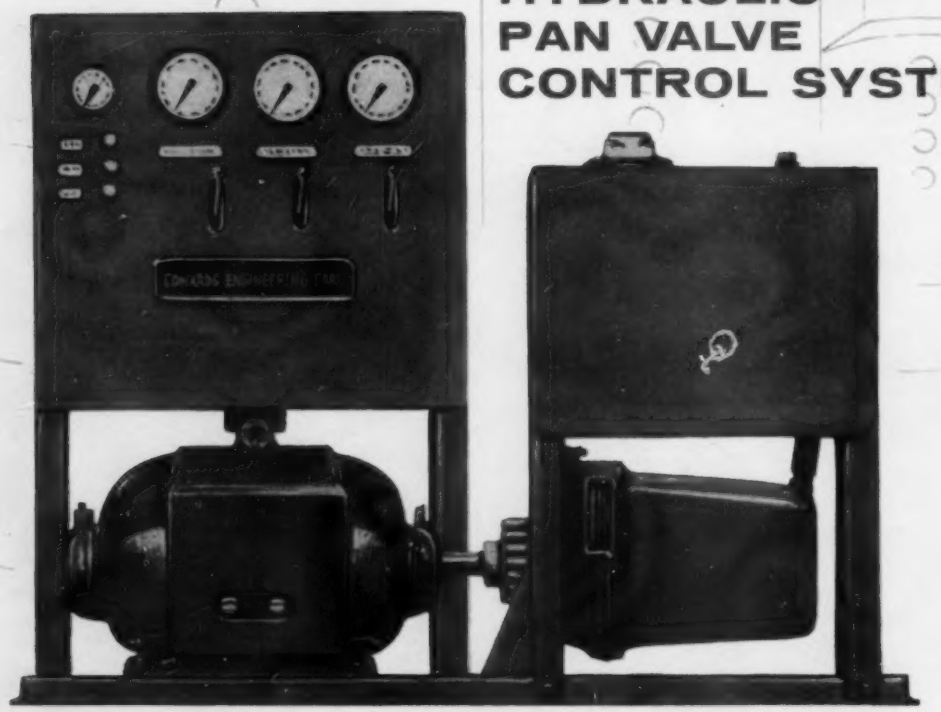
HYDRAULIC PAN VALVE CONTROL SYSTEM



BECAUSE:

1 Readily adapted to most existing valves, no special valves to buy.

2 Mounting of actuating component directly to valve, with extension of piston rod serving also as valve stem.

3 Positive fast action without danger of shock in fluid control system, with leakage compensating features.

4 All moving parts under constant lubrication by hydraulic fluid used in control system.

5 Quick coupling feature to loosen stuck valves with high pressure low volumetric displacement reserve pump unit to limit travel of valve sealing element without danger to valve after seat has been made free.

6 The fluid unit can serve several valve assemblies.

7 Minimum of maintenance.

8 Effects saving in labor.

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Bacteria-free sugar in less time with Celite Filtration

Thermophilic bacteria are completely removed from cane and beet sugar when you use Celite® diatomite filter aids. And, with Celite's fast flow rates, the entire filtering process is speeded up from start to finish. Even higher flow rates can be obtained by combining P_2O_5-lime defecation with Celite Filtration. This combination also reduces the fouling of char or activated carbon, and includes the added benefit of partial decolorization.

Celite is quarried from one pure deposit and shipped from the world's largest diatomite processing plant. This all-in-one, closely controlled source offers a continuous supply of all standard and special grades. It assures you of uniform, high quality results whenever or wherever you use Celite diatomite. Today, Celite grades include Celite perlite. See your J-M Filtration Engineer for details or write Johns-Manville, Box 325, N. Y. 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.

Celite Division filter aids, when used as such, are not considered food additives as defined by FD&C Act Amended, Section 201(s).

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27 smooth-running Allis-Chalmers pumps...

cut pumping costs in Swaziland's largest sugar plant

Other Allis-Chalmers products serving the sugar industry:

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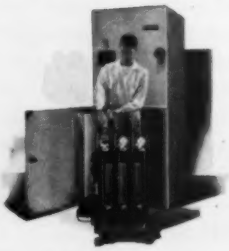
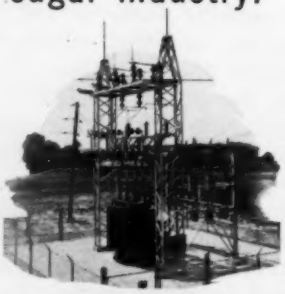
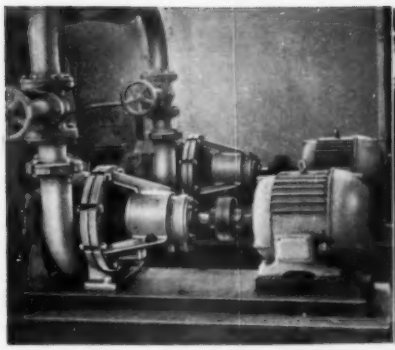


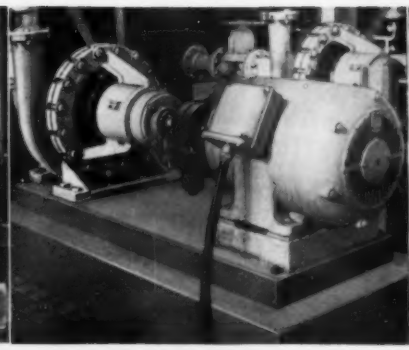
Controls



Substations



Two Allis-Chalmers Type PWH 5 x 4 all-bronze units pump **screened juice to scales.**



Two Allis-Chalmers Type PWG 5 x 4 all-bronze units pump **screened juice through filters.**

Two Allis-Chalmers Type PE 2 x 1 all-bronze units pump **molasses from centrifugals.**

Rugged construction, fewer working parts, easy access and maintenance . . . reasons why Allis-Chalmers pumps were chosen

Sustained high-efficiency pumping — from clear water to abrasive, hard-to-handle cachaza—is vital to profitable sugar mill operation. For Mhlume (Swaziland) Sugar Co., Ltd., twenty-seven Allis-Chalmers pumps *deliver* efficiency, and reduce maintenance costs as well. Allis-Chalmers pumps are durable, offer broad interchangeability of parts.

Pumps in use at Mhlume include eighteen Type PW units—pumping raw juice, maceration juice and water for boilers and general services. Type PW pumps are custom-assembled from standard parts for specific application requirements. To reduce maintenance downtime, they can be dismantled in minutes.

Nine Type PE units handle molasses, remelt sugar syrup and juices. *Equiseal* stuffing boxes and suction-side packings render these pumps virtually leakproof. Extra-rugged impellers promote longer pump life. Optional shaft sealing arrangements are available to meet special needs.

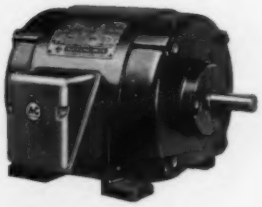
Also used under rigorous sugar mill conditions are high-performance Type S pumps—for general-service and boiler-feed water, and for some juices. Efficient, easily serviced pumps constitute just a few of Allis-Chalmers contributions to the sugar industry. Others are pointed out below. *For help in planning greater efficiency for your operations, see your A-C distributor. Or write to* **Allis-Chalmers International,** *Milwaukee 1, Wisconsin, U.S.A.*

Equiseal is an Allis-Chalmers trademark.

ALLIS-CHALMERS

A-1452

Dry-type transformers



Motors

Materials handling equipment

FIELD MECHANIZATION SECTION

MOSSMAN CENTRAL MILL CO., Australia's most northern sugar factory, is a pioneer in the cut-load method of mechanical harvesting of cane. This is the third season of extensive work with Massey-Ferguson harvesters using the concept of loading cane trailers in the field and moving directly to the factory.

The final stage in a £A100,000 experiment is in operation this year with specially designed cane trailers using the "containerization" concept. The containerization concept considers road transport trailers as containers to carry cane—not units permanently fixed to prime movers.

Five new trailers have been purchased, but only four new prime movers. These specially designed trailers were built by Freighter Industries in Australia and are now in operation. They are 35 feet long and 10 feet 9 inches from top to ground level. On the basis of the bulk density of chopped cane weighing 22 pounds per cubic foot, each trailer will carry 17½ tons. This weight is tied to the legal load allowable under local highway laws. The trailer can actually accommodate up to 19½ tons.

Sides of the trailers are of 14 gauge corrugated steel and the floor is of 22 gauge corrugated galvanized iron. The forward end is of 1-inch chain wire for visibility and the rear door of 14 gauge steel.

The widespread tandem is set on 9 feet 1½ inch centers, allowing an additional 3,000 pounds legal load on each axle.

The mill uses four A.E.C. Matadors—4-wheel drive, 112 H.P. diesel, prime movers. Each is fitted with a hydraulic lift turntable (fifth-wheel) and a standard quick-hitch.

The salient feature is that prime movers are unhitched from trailers each time units are brought to the mill. This is the key to the "containerization" idea. Road transport trailers are treated similar to rail cars, and not permanently fixed to power units.

The unloading device at Mossman is unique. It is designed to take advantage of an existing 20-ton main mill gantry. Since it is necessary to straddle the existing cane discharging units, a pivot truck was constructed on rails. A pivot spar on the rear of the trailer settles on this pivot truck. Thus, in discharging (see photo, page 30) the weight is taken entirely off the wheels of the trailer.

The trailer is lifted into tipping position, which is up to 42 degrees, before being pushed into discharging position. Two 12-inch rams, air hydraulically operated, push the trailer into position.

Mossman intends to try the transportation of whole stick cane in the near future. Tied bundles of cane will be loaded both in the harvest field and from cane trucks at the grower's point of delivery.

Two Massey-Ferguson cut-load harvesters are operated by the mill from 6 AM to 2 AM the following morning. They are expected to harvest 17,000 tons of cane this season. Truck tractors are fitted with individual 1,750 watt lighting plants for night illumination.

There is a growing acceptance of the idea in Australia that mills do the harvesting and transporting of cane for independent cane growers. This method has long been successful in Hawaii on those plantations having private growers.

The small capacity of the Massey-Ferguson machines, and high cost of maintenance, are unsatisfactory elements in the Mossman harvesting operation. However, it appears that costs are less than hand cutting and more effective than manual labor.

THE new Guneid sugar project in the republic of the Sudan in Africa, which will harvest its first crop early in 1962, plans extensive field mechanization. The mill, which will be located near Khartoum, is designed to crush 4,000 tons of cane per day.

As part of the field mechanization program, the project recently placed an order for 21 cane haul trailers with Hilo Trailer, Pty., Ltd. Each unit will have a capacity of 22 metric tons of cane on a frameless body equipped for chain net unloading. The big trailers will be pulled by Caterpillar 619 truck tractors.

All cane will be mechanically cut by four J&L whole-stick harvesters. Cane will be picked up by four J&L loaders of the type developed, and in use, by the U. S. Sugar Corporation, Clewiston, Florida.

The continuous loader chops stalks into 22-inch lengths. Cane pieces will then be discharged directly into the Hilo trailer for transport to the mill. A Hilo unloader has been purchased for discharging the trailer at the mill, placing cane onto the feeder table.

Sayed Ali Nur, general manager of the Guneid project, and Fred Rohn, sugar consultant for the Sudanese government, visited Florida, Louisiana and Hawaii inspecting equipment some months ago.

Three, 4-line, seed cane planters, designed and built by Stubenberg Co. in Honolulu, Hawaii, have been delivered for the new Sudan sugar operation. The planters have bulk bins for handling both seed cane and fertilizer. Adapters were also provided for pneumatic Traxcavator units to load the planters.

A NEW type cut-bundle-load cane harvester designed as an interim unit to work with existing transportation systems is being built in Hawaii for Grace & Co.'s plantation in Peru.

Mounted on a D-6 Caterpillar prime mover a ground knife cutter severs cane stalks in a single line. A gathering rake bundles the stalks and by means of a Thomson (Louisiana) hydraulic grab unit the untied bundle is loaded into small road transport cane carts operating in a train alongside the cutter. Cane in the carts is discharged at the factory by lifting wire cables attached to one side of the vehicle.

The machine is unique in that it handles 80 to 100 tons per acre, and down, cane.

The machine has been tested at Ewa Plantation Co. and Kahuku Sugar Co. Following modifications, it will be tested again in Hawaii before shipment to Peru.

The two Massey-Ferguson harvesters at Mossman Central Mill in Australia work from 6 AM in the morning until 2 AM the following morning. Cane is cut, chopped into short pieces, and loaded directly into the new 35-foot cane hauling trailer, which travels alongside. Note the chain wire front in the trailer to allow visibility for the truck-tractor operator. An individual lighting plant is provided on each truck-tractor for night loading.

BROUSSARD *flex-boom* CANE LOADERS

Model FB-20 heavy duty tropical type loader mounted on Caterpillar D-4, with Push Piler

ADVANTAGES:

- **Extreme Simplicity**
- **Perfect Operator Visibility**
- **Flex-Boom for Fuller Faster Loading**
- **Proven Efficiency (Since 1950)**
- **Highest Quality Workmanship & Materials**

The Broussard Loader may be easily installed at the destination on many types of wheel or crawler tractors already in hand, and quickly removed at the close of the harvest to permit normal use of tractor. Brief data: capacity 2000 lb/minute (under Louisiana conditions).

International Farmall 450
Louisiana

Track-Marshall
Rhodesia

Fordson-Major
Puerto Rico

BROUSSARD MACHINE COMPANY

ST. MARTINVILLE, LOUISIANA

The unique discharge mechanism for Mossman trailers is shown at left. It was designed to make use of existing facilities. The trailer is backed onto the carrier cradle and the truck-tractor unhitched. Rear of the trailer is gripped in the cradle and the overhead gantry picks up the front end by attachment to special lugs on each side of the trailer. All the weight is off the wheels. Then, two rams shove the up-ended trailer to the discharge pit. The back gate is opened and the chopped cane pieces slide out at a 42 degree angle.

ONE cane farmer in South Africa reduced his tractor repair bills 65% by devising a controlled system of maintenance. And he has established a reputation at the local Massey-Ferguson dealer of being one of their smallest users of spare parts.

This is the type of program advocated by George S. Bartlett in a recent article in the "South Africa Sugar Journal." Mr. Bartlett points to the fact that there is an investment of something like $700 million in mechanized equipment in South Africa, involving an annual expenditure of some $150 million. This is slightly more than the annual cost of wages, rations, housing, etc. for some 1,883,000 workers.

He says investigation shows that South African farmers achieve a tractor utilization of only 45%. "This theoretically means that we have twice as many tractors operating in South Africa as are really necessary," comments Mr. Bartlett.

With the recent development of the Division of Agricultural Mechanization and Engineering section as part of the South African Government's Department of Agricultural Technical Services, evidence is piling up pointing to the need for farmers and dealers to reexamine their approach towards mechanization. Mr. Bartlett has repeatedly commented on the high cost of mechanization in South Africa, compared with other countries. He suggests a new approach which will make equipment just 10% more efficient, or reducing maintenance and repair bills by 15%, as a means of saving substantial sums of money for the industry.

WAIALUA AGRICULTURAL CO. in Hawaii applied weed control chemicals to 78.8 acres of cane land in an hour by use of an airplane.

Up to 75% of the company's cane land can be sprayed by aircraft. Only those fields close to residential areas, farms, gardens and a few acres in gullies must be sprayed by hand.

Spraying is done for Waialua by Murray-air, Ltd. of Honolulu. They use a modified, single-seater Boeing-Stearman biplane with a 450 h.p. motor. The plane's tanks hold 150 gallons of spray material and one load is adequate to cover approximately 21 acres, at the average application of seven gallons per acre.

The pilot and a service attendant, from Honolulu, and three Waialua men—a herbicide mixer and two flagmen—comprise the airspraying crew.

MECHANICAL harvesting on a mill area basis is advocated for Australia by R. J. Creber, chairman of directors, North Eton Mill.

A separate organization within a milling association is recommended. Mechanical harvesters would be used in the mill area and one machine assigned to a number of farms in a particular locality.

Mr. Creber says that interest in mechanical harvesting is becoming more intense each year. Increasing effort is being made to develop a satisfactory machine to harvest cane under all conditions.

In an article appearing in the "Producers Review," Mr. Creber is quoted as saying, "The time is coming when we must look to mechanical harvesting as a major operation in our activities. It must come to an organization within the association embracing the whole of the harvesting, and thereby cheapening the cost and making it a uniform operation to the satisfaction of grower and mill. There is the possibility of a number of machines being under the direction of the cane inspectors or the traffic manager, subject to the direction of the farmer," says Mr. Creber.

HAMAKUA MILL CO. in Hawaii has cut twice as much cane with their HSPA-designed cut-windrow (Duncan) harvesters this year as was cut last year.

In 1960, only 27% of the crop was harvested with these cutters. This year the figure has been over 57%.

Of special importance is the good ratoon stands which follow use of the harvesters, compared with Hawaii's conventional push-rake method. Replant and weed control problems have diminished.

The harvested cane reaches the mill in a clean condition, at least by Hawaiian standards. There is little soil, cane stools or trash. Traditional harvesting methods in the Islands often result in almost half cane and half extraneous matter.

Notes On New Mechanical Developments

A "muck and mire" tire has been designed by Goodyear for agricultural uses. It has extremely low compaction and has a special tread that increases its mud-covering ability. The tire is 44 inches high and 40 inches wide, and requires only six pounds of air per square inch in wet weather and 10 pounds in dry. The tires are said virtually to float over a sea of mud.

U. S. Sugar Co. in Clewiston, Florida, is installing these tires on agricultural spray units and infield cane trucks.

Massey-Ferguson Ltd., a major farm machinery manufacturer, will soon start tractor manufacturing in Sao Paulo, Brazil. The new plant will be jointly financed by Massey-Ferguson do Brasil and Vemag, S.A., distributors of M-F products in that country.

Four hundred tractors will be produced monthly.

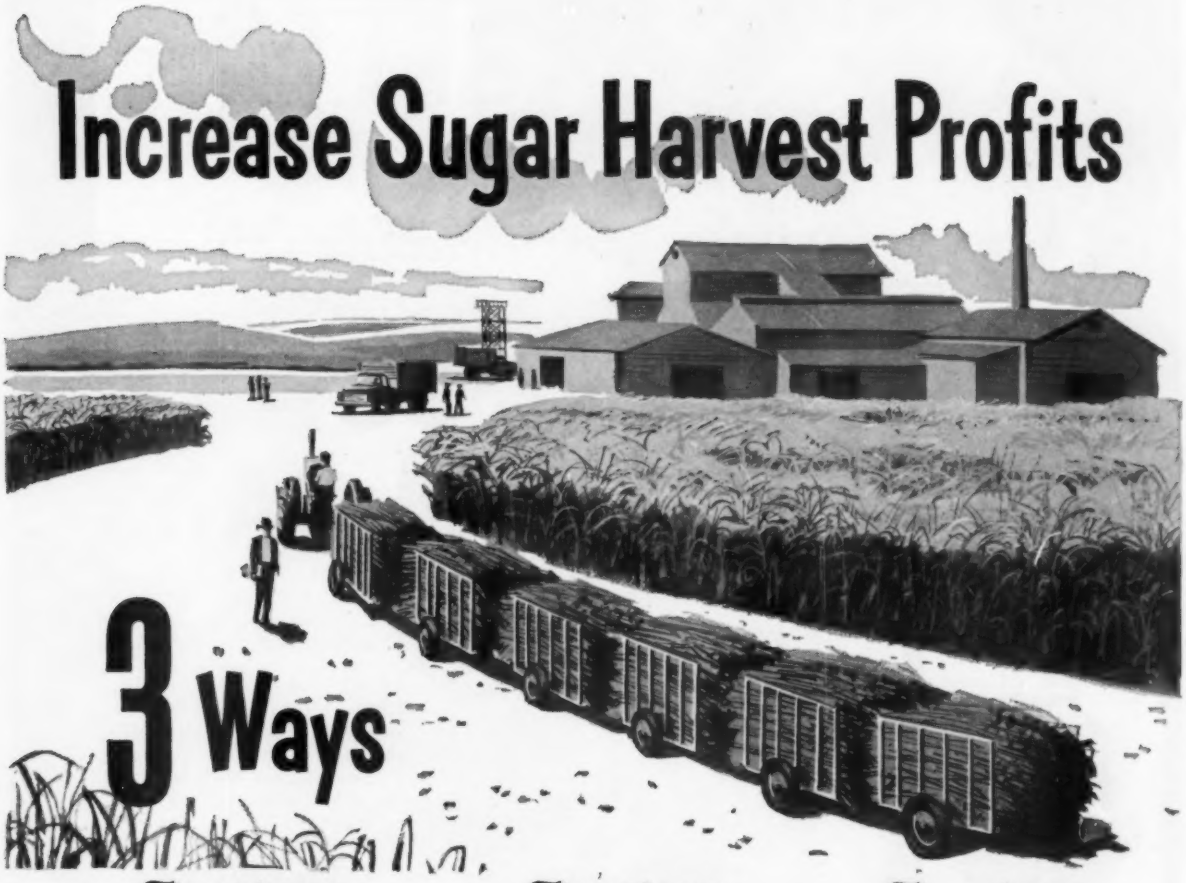
Already Brazil has some 70,000 tractors and M-F expects this figure to double in the next few years.

International Harvester has purchased 2,556 acres of land, located 70 miles from Melbourne, to test motor trucks, tractors, farm equipment, and construction equipment under Australian conditions.

A 2,000-foot long sealed loop road will be used for tractor testing. Some 2½ miles of 24-foot wide road will be constructed to form the initial motor truck testing circuit.

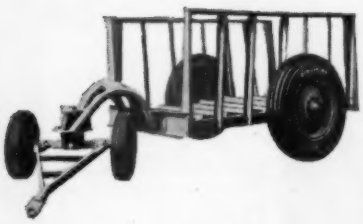
A new cultivator, which subsoils or provides deep plowing is being manufactured by Bomford and Evershed, Ltd. of Evesham, Worcestershire, England. Called the "Superflow," it combines lightness and strength by using only 3/16 inch metal in the box section. The frame is long enough to hold three rows of tines. It is said that this is the first time that this has been done on a mounted cultivator. Thirty-inch spacing is possible and there is a maximum of two feet between rows on a nine-tine model.

Increase Sugar Harvest Profits



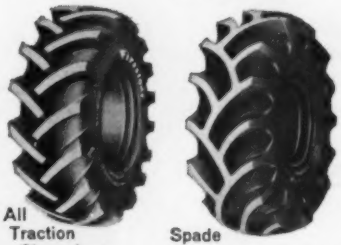
3 Ways

Firestone 1. ELECTRIC CANE CARTS



You can save time hauling cane from field to mill with Firestone Electric cane carts. For long hauls these carts can be hooked one to another to form a train. Firestone Electric cane carts are sturdily built with strong steel frames and high carbon steel axles. The heavy-duty wheels are equipped with tapered bearings and Firestone tires for long life and easy rolling. Many sizes and styles are available to fit your particular needs.

Firestone 2. TRACTOR TIRES



All Traction Champion — Spade Grip

You get full drawbar pull in any field in any soil condition with Firestone tractor tires. In wet fields the Firestone Spade Grip is unequalled for self-cleaning and pulling. In normal soil conditions the Firestone All Traction Champion will give you the best service. New Firestone Rubber-XF gives much longer road wear. Special sidewall compound resists aging, cracking and flex damage. Firestone Shock-Fortified cord guards against impact damage.

Firestone 3. TRUCK TIRES

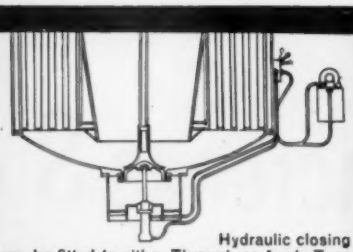
Super All Traction — Transport Heavy Duty

Whether you drive in the field or on the highway there is a Firestone truck tire to fit your needs. The Super All Traction is especially designed to give extra traction needed for field and unimproved road — the Heavy Duty Transport provides longer service and lower operating costs in all types of highway service.

See your Firestone distributor for Firestone Electric cane carts and Firestone tractor and truck tires.

FIRESTONE INTERNATIONAL COMPANY Akron 17, Ohio U.S.A.

Photograph of flattened coil elements in coil type vacuum pan belt.



Hydraulic closing can be fitted to either Through or Angle Type Valves. Simple control opens and shuts valve or locks it in either position.

FLETCHER VACUUM PANS

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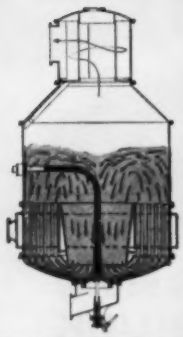
PAN FEATURES

Low Head of Massecuite, Large Downtake and uniform steam distribution giving Rapid Circulation. This ensures well formed crystals, absence of smear and false grain and a minimum of twins and conglomerates.

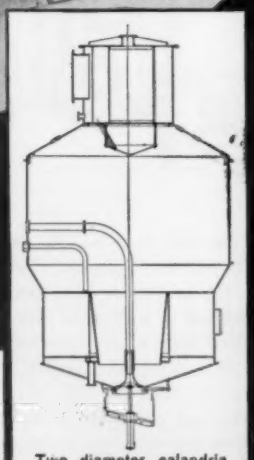
all welded construction

No flanged joints. Shipped in sections for welding together at site.



Low Head of Massecuite at the capacity level. Pans of cast iron or steel construction.

According to the size of pan, one, two or four inlets are provided, controlled by one valve.



Two diameter calandria pan of fabricated knocked down construction for partial site welding.

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The President's Message

Hawaiian Sugar Technologists Face Grave Problems

By John T. Moir 3rd.

President, Hawaiian Sugar Technologists

THE 20th Annual Meeting of the Hawaiian Sugar Technologists (HST) is being held November 13th through the 16th, at the Princess Kaiulani Hotel in Honolulu.

A varied program covering all aspects of Hawaii's sugar industry is prepared for presentation to an anticipated 550 members in attendance. The program and publications committee, with B. B. Alexander of Theo. H. Davies & Co., Ltd. as chairman, has worked hard to put together a productive and interesting week. Members attend the presentations of their choice since integrated operations cross many functional areas. Shortly after the conclusion of the sessions, a printed booklet of the talks and presentations is compiled for distribution to all members.

In addition to our annual meeting, sectional meetings are held on the four sugar-producing islands of Kauai, Oahu, Maui and Hawaii, throughout the year to keep sugar technologists abreast of new ideas, practices, methods and equipment. Since only a portion of HST membership can attend annual meetings in Honolulu, the island meetings serve to stimulate and inform those who cannot participate in the annual meetings. Guest speakers from other parts of the world are encouraged to visit as many of the other island meetings as time permits.

The HST Factory Methods Committee meets periodically during each year to review the best procedures in factory control and to keep the HST manual, "Official Methods of the HST for Control of Cane Sugar Factories," last printed in 1955, up to date.

The question is sometimes asked: What is the difference between the HSPA and the HST?

a. The Hawaiian Sugar Planters' Association (HSPA) is a non-profit, agricultural organization of plantations and individuals united for the purposes of maintenance, advancement, and protection of the sugar industry in Hawaii, the support of an experiment station, coordination of shipping, industry statistics, assistance in legislative matters, and the development of agriculture in general.

b. The Hawaiian Sugar Technologists (HST) is a voluntary organization of individuals at the industry's technological and supervisory or higher level of management, together with others allied with the industry as associates, joined to learn more about all phases of cane sugar including processing.

Our industry has not shared in the growth of the U.S.'s 50th State. The position of sugar which once was the leading industry in Hawaii is shown in the table.

The static position of the industry is clearly illustrated below when in 1940, it paid in wages and salaries double what state and local governments did whereas in 1960, the reverse was true. While the federal government has large military installations which swell its contributions to the economy, Hawaii paid $232 million in federal taxes in 1960.

The industry is still recovering from the effects of a four-months-long strike in 1958 which caused substantial reduction of our production in 1958, 1959 and 1960. A new agreement with the union, reached earlier this year, resulted in still higher wages and benefits, including a precedent-setting dental care plan for children of workers. It is worthy of note here to say that the industry is always in a difficult and relatively weaker bargaining position because of the necessity of protecting the large investment it has in a highly perishable crop. The last State Legislature failed to adjust a highly inequitable local manufacturing tax on sugar production for what appeared to be purely political reasons. In the vital area of shipping, the industry may be forced into the position of providing its own shipping if the present carrier increases freight rates—the industry's present ocean freight bill is almost $6 million. The increasingly intense beet competition in our primary market area forces our

	Gross Receipts from Exports (Millions of Dollars)			Net Income In Hawaii (Millions of Dollars)
	1940	1950	1960	1960
Sugar	49	119	123	80
Pineapple	46	97	113	70
Tourist Expenditures	12	97	131	80
Total Federal Payments in Hawaii	N.A.	202	486	390

Stated another way in terms of:

	Wages and Salaries Paid (Millions of Dollars)		
Classification	1940	1950	1960
Sugar	32	56	58
Pineapple	12	31	39
Construction	11	25	99
Trade	24	74	160
Services	13	40	96
Federal Government	44	150	327
State & Local Government	17	53	111
All Others	26	81	185

Figures are estimates, courtesy of Dr. Thomas K. Hitch, Vice President & Director of Economic Research, First National Bank of Hawaii.

Hawaiian Sugar Industry	1940	1950	1960
Total number of employees	41,000	22,500	14,000
Dollars per hour paid to hourly, non-supervisory workers	$.27-1/4	$1.03-2/3	$1.64-1/2
Tons sugar produced per employee	24	43	67

Figures courtesy H.S.P.A.

industry to suffer substantial losses in rail freight absorption—in 1960 this amounted to more than $3 million.

In an effort to diversify from this competitive market into other sugar areas and other businesses as well, within the last two years many of Hawaii's companies have turned to other foreign and domestic regions. A major Puerto Rican sugar organization (Fajardo) has been acquired by C. Brewer Puerto Rico, Inc. This company produces sugar much closer to better markets than Hawaii. Other major sugar agencies have, or are, diversifying into non-sugar sources of income in Hawaii, California, Australia and other foreign areas. Through Hawaiian Agronomics (C. Brewer & Co., Ltd. subsidiary) and Amfac Associates (American Factors, Ltd. subsidiary), there has been management and consultation work with other sugar-producing areas in the world since Hawaii's abilities and technology are well-recognized. These areas include such countries as Iran, Ecuador and Taiwan. Sugar machinery and equipment designed or fabricated in Hawaii can be found in the Philippines, Sudan, Peru, and other sugar areas.

The industry's work force is old in age. Mechanization, plus stepped up cost-cutting practices, have resulted in limited hirings during the past years. The lay-offs have affected younger, less-senior employees. There is much to be done in method improvements as the older workers retire. The table illustrates the labor trend in the last 20 years.

The industry-wide average profit for 1960 was less than one percent of net worth for the second straight year; there was a loss in 1958. In 1960 on sugar operations, cost of production and delivery at market exceeded income by $2.4 million. The last negotiated union settlement will cost an additional $3 million in 1961 and 1962 and our primary refiners, C & H, anticipate a return of $4.5 million less this year because of heavy competition from beets which now have almost an unrestricted acreage because of quota increases.

It should be noted that the figures below, courtesy H.S.P.A., apply to a two year crop; 1940 had much clean, hand cut cane; 1960 yields were lower than anticipated because of the lasting effects of 1958 strike.

Millions of dollars have been spent for improvements and mechanization in the last 15 years in a programmed effort to remain competitive by increasing production and quality and reducing overall costs. Mechanized harvesting with consequent factory cleaning plant installations, roads and hydro-separators, newly designed field equipment and irrigation installations, replacement of old milling and boiling house installations with new automated machinery—in these areas, Hawaii has been in the forefront.

Members of the Sugar Technologists help to plan and program these improvements to assure maximum returns for invested capital. An organization such as the HST helps Hawaii's sugar industry by serving as a medium for interchange of ideas and information. Its members realize the serious position Hawaii's sugar industry finds itself in and are optimistically working together to enable the industry to attain a profitable status.

The estimate for this year's crop is 1,075,000 tons. Because of labor interruptions, we last met our quota in 1956 with 1,099,543 tons.

The 1961 program will serve, as in past years, to further "the study of the sugar industry, in all its aspects, and the promotion of welfare," the objectives of HST.

Hawaiian Sugar Industry	1940	1950	1960
Total acres in sugar	235,110	220,383	224,617
Tons of 96° sugar produced	976,677	960,961	935,744
Tons of 96° sugar produced per acre	7.16	8.78	9.03
Cost to produce and market one ton of sugar:			
High cost plantation	$103.05	$146.44	$168.65
Low cost plantation	$ 57.61	$ 92.71	$109.00
Average price received per ton of 96° sugar	$ 52.44	$115.37	$121.56
Industry % profit of net worth	3.46	6.67	0.86

PROGRAM AND ABSTRACTS

Hawaiian Sugar Technologists Annual Meetings

November 13-16, 1961

Monday, November 13

7:30 AM—Registration

9:00 AM—Call to Order and Welcome—John T. Moir, 3rd, President HST

9:10 AM—**Problems We Face**—Mr. Boyd MacNaughton, Vice-President, Hawaiian Sugar Planters' Association

9:55 AM—Business Meeting

10:30 AM—A Report on the East-West Center

11:00 AM—Experiment Station Reports—Dr. L. D. Baver, Director

11:45 AM—Luncheon Program—Royal Hawaiian Hotel
The Honorable Daniel K. Inouye, Member of Congress, will be our guest speaker.

1:15- 4:30 PM—HSPA Experiment Station Tour

1:15- 1:35 PM—**OSA (Pentachlorophenol) in Irrigation Water**—*Harold Hall*
A report on the use of OSA Formulations for weed control. Method of application in irrigation water and other data including costs and effect on cane and weeds will be covered.

1:35- 1:55 PM—**Control of Salinity in Overhead Irrigation**—*Robert Campbell*
The salinity of soil and irrigation water will be discussed in relation to leaching requirement.

HST Board of Governors—Members of the HST board of governors are (left to right): front row—B. B. Alexander, Theo. H. Davies & Co.; J. T. Moir 3rd, C. Brewer & Co.; W. S. Haines, Hawaiian Commercial & Sugar Co., and Maurice H. Hewitt, Laupahoehoe Sugar Co. Back row—R. H. Mott-Smith, Hawaiian Agricultural Co.; C. D. Christophersen, Kahuku Plantation Co.; B. W. Baldwin, Hutchinson Sugar Co.; David Ballie, The Lihue Plantation Co.; F. F. Hebert, Grove Farm Co.; F. D. Kennedy, Hawaiian Sugar Planters' Association; E. S. Smith, McBryde Sugar Co., and E. C. Bryan, Ewa Plantation Co.

1:55- 2:25 PM—**Water-Yield Relationships in Sugar Cane**—*Robert Campbell*

Results of recent experiments which show response of sugar cane to varying amounts of water.

2:25- 2:45 PM—**The Big Squirt at Kekaha Sugar Co.**—*O. R. Moe*

A description of overhead irrigation using the Big Squirt equipment.

3:00- 3:30 PM—**Climatic Methods for Estimating Consumptive Use of Water**—*Jen-Hu Chang*

A discussion of methods used for estimating consumptive use by sugar cane and its application to long range planning and day to day operation.

3:30- 4:00 PM—**Plant Tissue as Indicators of Moisture Tension**—*T. Tanimoto*

The moisture content of 4-5 joint tissue as a measure of water stress of the cane plant.

4:00- 4:30 PM—**Soil Moisture Relationships**—*Dr. M. B. Russell, Univ. of Illinois College of Agriculture. Head, Dept. of Agronomy.*

A summary of methods and results of moisture utilization studies of various mainland crops.

1:15- 2:45 PM—**Pensions & Inflation—The Problem & Some Solutions**—*Dr. N. Wermel, University of Hawaii.*

The Dean of the Business School at the University of Hawaii, an actuary, will explain the basis of the computations of retirement and insurance benefits and costs. The term "actuarially" computed will be stripped of the mystery surrounding its definition. How accurate are the prognostications of the actuaries and are they too cautious, will be some of the questions discussed.

3:00- 4:30 PM—**Plantation Newspapers: A Waste of Time?**—*Jack Fox*

A public relations man with considerable news writing experience answers this provocative question in the affirmative. The talk should stimulate all plantation industrial relations people and editors to appraise the quality of their journal. House organs serve a purpose if objectives are established which meet a particular need of the Company. Editors who have no conception of what their Company needs are and who edit their Monday paper in a perfunctory manner are indeed wasting their time and their Company's money.

Tuesday—November 14

8:30-11:45 AM—HSPA Experiment Station Tour

8:30-10:00 AM—**Hawaii Motor Carrier Act**—*Mr. Wilbur K. Watkins,* Special Deputy Attorney General

The Hawaii Motor Carrier Act which became effective August 21, 1961, will be covered in as far as it relates to sugar operations.

8:30- 9:15 AM—**Research in the Refining Characteristics of Sugar**—*Dr. P. F. Meads*

The effect of various constituents on the removal of color by bone char has been investigated. It has been found that both soluble and insoluble substances interfere with color removal. A pressure filter method of measuring filterability has been developed. This appears superior to the Elliott method.

9:15-10:00 AM—**Sugar Quality Research**—*John H. Payne*

Gel filtration technique has been used to isolate constituents in the sugar crystal by molecular size. These substances were then characterized by spectrophotometry in ultraviolet. The relationship between the color and internal moisture in the sugar crystal has been established quantitatively. The values found differ from those in the mother liquor. Materials contributing to crystal color measurement can be removed from solution of crystal by ultracentrifugation (av. force 105,000 x G). This indicates that insoluble substances not removed by filtration affect color measurement.

10:15-10:45 AM—**Terminal Operation**—*D. G. Conklin,* Kahuku Plantation Co.

The sampling and analysis of raw sugar at the bulk terminal facilities will be discussed.

10:45-11:45 AM—**Centrifugal Developments**—*George Bromley,* Oahu Sugar Co.

A B.M.A. continuous sugar centrifugal has been under test at Oahu Sugar Company. The machine is a vertical spinning cone machine in which the massecuite enters at the bottom of the cone. Molasses passes through the screen of the cone and sugar discharges from the top of the cone. Tests have been conducted primarily on low grade massecuite. Capacity and performance characteristics of the machine are promising.

10:15-11:45 AM—**Planned Equipment Replacement**—*Jay Pilon*

There are various factors to be questioned in an economically sound replacement and equipment selection program regardless of application. The factors of production, depreciation, repair, obsolence, availability, resale, taxes, interest, insurance, operating cost, and dollar fluctuation must all be considered. A sound program, based on the individual user's experience and his records, can lead to tremendous savings in the high-expense equipment area.

11:45- 1:15 PM—**Luncheon Program**

1:15 PM—**General Address**—*Dr. W. R. Crawford,* Deputy Director of Research, Sugar Research Institute, Queensland, Australia

2:00 PM—**General Address**—*Dr. M. J. Russell,* Head, Dept. of Agronomy, University of Illinois

3:00 PM—**Highlights of the 1961 Negotiations**—*John Murphy*

The Chairman of the Sugar Industry Negotiating Committee will discuss the past contract negotiations with special emphasis placed on the industry's position on wage arbitration. The implications of the settlement will be dealt with by the speaker.

3:45 PM—**The Implications of HSPA Legislative Activity**—*Vern Spackman*

A particularly active HSPA Legislative Committee in 1961 will have its vice chairman speak on the objectives of the Committee, the success and failure of the Committee in the 1961 legislature, and how supervisory employees of sugar plantations could assist in the passage of good legislation that would aid their Company and their community.

Wednesday, November 15

8:30- 9:30 AM—**Chain Drives and Conveyors**—*B. L. Pearce,* Link Belt Co.

Power transmission and conveyor chains have parts which perform three functions: Sidebars to transmit tension, pins and mating parts to provide for joint articulation, and a sliding or rolling surface for sprocket contact. The various chain problems in the sugar industry require different chain designs, which are selected because of the need for emphasis on wear (sliding or joint), strength (ultimate or fatigue), etc. More economical solutions to these problems are made possible by data being obtained from metallurgical and physical laboratory tests and field tests.

9:30-10:15 AM—**Developments in the Cane Diffusion Process**—*H. F. Silver,* Silver Engineering Works, Inc.

Newly designed machinery for the preparation of cane for diffusion and the diffusion of cane is described. This machinery is now available in capacities up to 300 tons cane per hour.

10:30-11:45 AM—**Modern Milling Practices**—*Dr. W. R. Crawford,* Deputy Director of Research, Sugar Research Institute.

Theoretical and practical milling practices in Australia.

8:30-10:00 AM—**Mechanical Harvester Developments**—*W. Burton, L. Anderson, J. Rockstead, J. Carras, W. O. Gibson*

A review of the features of the cut-load harvesters under trial at HC&S and Laupahoehoe Sugar Co. A progress report on the performance of these machines will be made with particular attention on quality of cane delivered to the mill.

8:30- 9:15 AM—**Trades Progression Program**—*F. Vaughn, A. Millikin, R. Moyle*

A progress report of the activities of the Trades Progression subcommittee concerning the proposed automatic trades advancement program to be negotiated with the Union. The panel will cover aspects of the program including the screening requirements, the minimum qualifications and the rate of progression.

9:15-10:00 AM—**Job Classification**—(Panel to be named later)

10:15-11:45 AM—**Legislative Activities in 1961**—*C. Cameron and panel*

Legislators who are connected with the sugar industry present their individual views on the activities of the past state legislature. Also on the program will be the HSPA Legislative Analyst who will report on the function of his office and the accomplishments in the first year.

8:30- 9:00 AM—**Adsorption of Herbicides by Hawaiian Soils**—*Q. H. Yuen, H. W. Hilton*

Soil factors as influences on effectiveness of a herbicide appear to be of importance because of the trend towards pre-emergence application of organic chemicals in our weed control practice. Preliminary investigation into the causes of inconsistent results obtained from uniform dosages of CMP—3-(p-chlorophenyl)-1,1-dimethylurea -- shows that soil "fixation" plays a significant role in variability of weed control and effect on sugar cane. This paper covers research on soil "fixation" problems and reports especially on CMU, and DCMU—3-(3,4-dichlorophenyl)-1,1-dimethylurea.

9:00- 9:30 AM—**Basic Screening of Herbicides**—*Kenneth A. Sund, Norman Nomura*

Laboratory assay methods have been developed for the evaluation of herbicides which are applied in three principal ways, i.e., as contacts, systemic weedkillers or for pre-emergence control. The method employed for testing pre-emergence chemicals demonstrates lethal toxicity of herbicides at extremely low dilutions, e.g., 0.1 p.p.m. Twelve of the most important materials used in Hawaii show remarkable differences between themselves depending on the morphological state of the plant exposed to an application of the herbicide.

9:30-10:00 AM—**Manienie Grass Control at Kilauea**—*R. Weimer, K. Harada*

A progress report on the experiments conducted at Kilauea Sugar Company for control of persistent strains of manienie.

10:15-10:45 AM—**Passiflora Control at Kohala**—*K. Kunimitsu*

Report on tests to control Passiflora at Kohala with data on material, rates and degree of control.

10:45-11:15 AM—**Incorporation of Herbicides in Soils and Application Equipment**—*Noel Hanson*

Studies here and on the mainland have shown that mixing of 2,4-D, substituted ureas, triazines and Eptam in the upper inch of soil gives longer pre-emergence weed control than where the herbicide is sprayed on the surface only. Studies here have favored roto-tilling immediately following spraying. HSPA pressure knapsacks of fiberglass as well as weed burning and stroller spraying at Kohala will be discussed.

11:15-11:45 AM—**Time Lapse Movie of Herbicide Effects on Sugar Cane**—*R. Elliott, N. Hanson*

Films showing effect of contact, systemic and pre-emergence herbicides on different varieties of sugar cane.

10:15-11:45 AM—**Modern Lubrication — What It Can Mean in Hawaii**—*R. W. Goodale,* Standard Oil Co.

11:45- 1:15 PM—**Luncheon Program**

1:15- 4:30 PM—**Milling Operations**—*R. H. Hughes,* Moderator

1:15- 2:00 PM—**Milling Efficiency Studies at H.C. & S. Co.**—*W. S. Haines*

Because of the direct relationship between extraction and quantity of maceration water observed in 1959 tests, work during 1960 was aimed at changes in operating variables that would overcome the principal limitation on maceration rate, namely the lack of feedability of the last mill. The over-all effect of such changes on both juice and pol extraction was measured on a specially instrumented tandem. The results showed that increased speed and reduced hydraulic load both allow increases in maceration rates as well as substantially higher juice extractions. Similar increases in pol extraction did not take place, however, due to very poor mixing of the maceration water with the residual juice. Seasonal effects on the efficiency of mixing were also noted and percentage of the juice free from cells was estimated by an empirical procedure. Tests during 1961 were devoted to a check of the seasonal (and apparently preparation) effect on the mixing efficiency as well as attempts to increase mixing efficiency by both chemical (detergent) and mechanical means. The use of a detergent was totally ineffective. The results with an ironing roll just ahead of the eye of the last mill are not complete at this time (September 1) but it is expected that results will be available for presentation at the November meetings.

2:00- 2:45 PM—**Mill Settings**—*Jordan G. Simonoff*

Application of mill setting procedures at H.C. & S. Co.

3:00- 3:40 PM—**Application of the Screw Press to Dejuicing Cush-cush**—*John H. Payne, W. S. Haines, and Ken Nishioka*

Treatment of cush-cush with a French Oil Mill Machinery Co. screw press (10¼" diameter) was investigated at Hawaiian Commercial & Sugar Co. Average results from several series of tests using various interval arrangements of the press were: capacity 2.3 tons fiber per hour, pol extraction 91%, bagasse pol 3.3%, bagasse moisture 43%. Power requirements averaged 82 horsepower per ton fiber per hour.

3:40- 4:10 PM—**DSM Juice Screens**—*J. W. Herkes*

Since the shredder installation, there has been a large amount of fine bagasse in the raw juice. Throughout 1960 we could not operate the clarifier and filter properly. This year, twin DSM screens take out 65% of the fiber in the raw juice, resulting in about a 50% reduction of clarifier muds. This enables us to add a higher amount of fresh bagacillo make-up to the filter, also improving this operation. With these DSM screens, there has been no clarifier or filter trouble this rainy year.

4:10- 4:20 PM—**Summary and Conclusions**—*Dr. W. R. Crawford*

1:15- 2:00 PM—**Brewer Training Center**—*R. W. Mist*

The director will describe the supervisory training program of Brewer in Hilo. Supervisors of all levels are sent from the Brewer plantations for a one-week course which

covers all phases of supervision, including giving orders, handling grievances, communication, training subordinates, etc. An objective appraisal of the program will be presented.

2:00- 2:45 PM—**Implication of the Aging Work Force** —*I. Gutmanis*

While the aging of the sugar work force is quite evident to everyone in the industry, few are aware of the implications this could have on the sugar industry in the next ten years. An economist will employ statistics bearing on this situation and discuss what they will mean to the industry in the future with respect to the security and rising needs.

3:00- 4:30 PM—**Workmen's Compensation & Its Critics** —*Dr. Earl Cheit*, Univ. of Calif.

A nationally prominent authority in this field will present his views on current trends in Workmen's Compensation.

1:15- 1:45 PM—**New Herbicides**—*Don Burgoyne and Vernon W. Olney*

Reports on Du Pont #326 and latest information on triazines.

1:45- 2:45 PM—**Round-up of Weed Control Practices** —*K. Willey, F. Trotter, E. Warner, W. Baptiste*

A summary of distinctive features of herbicide practices on various plantations on Kauai, Oahu, Maui and Hawaii.

3:00- 3:30 PM—**Progress Report on Mechanical Seed Cutting**—*Jay Rockstead*

Movies and reports on performance, quality, and cost aspects of mechanical seed cutters at H.C. & S. Co.

3:30- 3:45 PM—**Space Planting**—*Leroy M. Kosaka*

Yield studies of space planting at H.C. & S. Co. with data on growth and stalk density.

3:45- 4:30 PM—**Round-up of Planting Practices**—*K. Willey, F. Trotter, E. Warner, R. T. Vorfeld*

A summary of distinctive features of planting practices on various plantations on Kauai, Oahu, Maui and Hawaii.

1:15- 2:45 PM—**Field Equipment Used in Foreign Sugar Cane Production**—*Art Stubenberg*

This presentation will be offered via the medium of photographic slides and vocal explanation by Mr. Stubenberg who has traveled extensively in foreign sugar producing countries and especially in South America.

3:00- 4:30 PM—**Torque Converter and Full Torque Shift Transmission**—*W. C. Edwards*, Allison Div. General Motors

It would appear that the hydraulic torque converter and full torque shift transmission was the number one progressive development made in equipment during the past ten years. Since 1952, the known number of domestic manufacturers of torque converters have increased some 186%, the known number of domestic manufacturers of full torque shifting transmission have increased some 500% and the known number of domestic manufacturers of heavy equipment offering these components have increased some 600%.

1:15- 2:45 PM—**The Electric Computer as a Research Tool**—*George Darroch*

Day to day progress of research is dependent upon the accumulation and assimilation of large volumes of data. Good examples of this are the infiltration rate studies, overhead sprinkler studies, and genetic and other field trials. In each of these cases the raw data in itself is not meaningful, nor is it ready for any sort of statistical treatment; a variety of routine calculations must first be accomplished and then appropriate statistical treatments applied. Careful planning and preparation of suitable programs can provide a pathway from raw data to a finished report, ready for reproduction and distribution, with very little operator intervention. Programs for linear programming, large scale regression studies and such techniques are available and can be readily applied as the basic information is developed. Simulation studies of cane production could lead to further understanding of production problems as research personnel are able to pinpoint the basic facts and propose suitable mathematical models. Some of these applications will be discussed together with problems of data collection, programming, errors and the like.

3:00- 4:30 PM—**Reducing Crane Loader Operating Costs** —*S. Reed and J. Spedden*

Thursday, November 16

8:30- 9:15 AM—**Spreader Stocker Fired Boilers**—*Stanley Mott-Smith*

To record and discuss present methods of firing bagasse, the furnaces utilized and their chief characteristics for efficient combustion combined with low maintenance costs. Also reviewed will be equipment now in use to recover a higher percentage of the total heat generated. Details of recently installed steam generators in Hawaii will be discussed. Divergent design features will be commented on and routine operating statistics compared. Operators of these boilers will be asked to comment.

9:15- 9:40 AM—**New Pan Performance at McBryde Sugar Co.**—*Wah Fai Dang*

A new fabricated pan equipped with straight sides, bottom driven propeller and metex mesh mist eliminator was installed in the last off-season after the 1960 crop to boil commercial seed and finished strikes. The new pan has fulfilled our expectations of (1) increased evaporating capacity through greater area of heating surface and the effect of the stirrer, (2) increased the rate of crystallization enabling us to boil larger grain in spite of low purity juices, (3) the color of the sugar has been improved through a combination of slurry graining and perhaps more even pan temperatures. Also the use of Dow Separan AP-30 in clarification may have had an effect, (4) we have not experienced any noticeable entrainment. One of the problems encountered was the dislodgement of the mist eliminator after six months of operation.

9:40-10:00 AM—**Two-stage Centrifugal Displacement Vacuum Pumps**—*F. A. Stokes*

Individual two-stage centrifugal displacement vacuum pumps were installed during the 1960-61 seasons on all vacuum pans and a quintuple effect evaporator. Units are con-

nected to barometric condensers and feature ease of operation, low maintenance, the ability to handle liquid with entering gas, low seal water requirements and easily controlled non-surging vacuum. Multiple v-belt drives and proper sizing of pumps allow for future expansion through changing sheave ratios and drive units. Units are ideal for premium water areas.

10:15-11:45 AM—**Minor Factory Improvements**—*E. F. Ferguson, R. W. Giannini, Takuzo Inouye, Myron H. Caplin*

A series of short discussions of practical improvements of a minor nature that have been made during the past year on all the islands. At least 25 different topics will be presented ranging from "Paint for Centrifugals" to "Use of Teflon" and "Mastic Arches for Boiler Furnaces."

8:30-10:00 AM—**Employee Motivation**—*Dr. John Ferguson*

10:15-11:45 AM—**Wage Incentives: Are They Still Worth While?**—*D. Avery & panel*

A panel including an industrial engineer, an industrial relations director and an operating man will discuss this crucial problem of wage incentives. The panel will discuss the history of incentives in the sugar industry, the disputes that have occurred and the outlook on incentives. A candid discussion of the causes of the problems arising out of the incentive operation will be held.

11:00-11:45 AM—**Concrete Pipe Lining — Continuous Concrete Ditch Lining**

Films of equipment used in relining old metal pipe with concrete and of equipment used to line open ditches.

8:30-10:00 AM—**Requirements for a Successful Maintenance Program**—*F. Bolte*

An oral and colored slide presentation on the basic automotive and field equipment preventive maintenance program developed for American Factors, Ltd. plantation that offers some challenging viewpoints and approaches to maintenance problems. Also, a stimulating game of "20 Questions" will give you an opportunity to rate your present program. By numerical scoring you will recognize your program for what it really is and be provided evaluation defining both its strong and deficient areas.

10:15-10:45 AM—**Improved Engine Economy Through Full Flow Filtration**—*W. G. Nostrand*

Economy is a must in the performance of mechanized equipment. Since machinery is proportional to operating cleanliness, de-

(*Continued on page* 52)

HST Program and Publications Committee—Members of the HST's program and publication committee are (left to right): front row—B. W. Baldwin, field section; B. B. Alexander, chairman; Ray L'Amoreaux, industrial engineering, and Jay Sasan, cultivation. Back row—Frank Wiley, factory section; Jack Vorfeld, automotive; Harold Hee, industrial relations, and Kelcy Isenberg, harvesting.

View of part of the HSPA Experiment Station, supported completely by private funds provided by the plantations. Sugar men around the world recognize it as the finest of its type in the world.

History of the Hawaiian Sugar Technologists

Fred D. Kennedy
Secretary-Treasurer

The present HST society had two parent organizations, both of which started some 59 years ago. The Hawaiian Sugar Chemists Association was organized at a meeting in Honolulu in November 1902 by a group of 23 men, most of whom were sugar factory chemists. Purpose of this society was "the study of sugar chemistry and of methods of analysis used in effecting chemical control of sugar house work, with the aim of arriving at uniformity both of methods and statement of results". The first annual meeting was held in October 1903. The growth of this organization was very slow for several years as the field of membership was rather limited; membership was probably never much over 40. Another possible and rather interesting reason was reported opposition to the association based on suspicions in some quarters that it was a union of chemists formed with the ulterior motive of controlling recompense and defining the hours of work.

In 1907 the field of the organization was enlarged to include chemists in other industries and the qualifying word "sugar" was dropped from the name. During part of the next two years quarterly meetings were held and then annual meetings were reverted to until 1922. The growth of membership of this association was somewhat better as about 125 members were reported in March of 1922.

The other parent group, the Honolulu Engineering Association, was formed in February 1902 by six men, none of whom were directly connected with the sugar industry. Annual meetings were held, and then in 1906 the scope of this organization was enlarged and the name was changed to the Hawaiian Engineering Association. However, there was little, if any, connection with the

sugar industry until the spring of 1913 when a committee was appointed to plan and hold a convention of sugar mill engineers. The first annual meeting was held in October 1913 with 29 mill engineers present. In the next few years this association and the Hawaiian Chemists Association began to draw closer together. In 1913 and 1915 the two groups met about a week apart; in 1914 and 1916, the annual meetings were held on adjoining days. At the 1917 convention, the two societies held a joint meeting for two days and separate meetings for three days. The Engineering Association fell into a period of inactivity and no meetings of this group were held in 1918 and 1919. In 1920 another joint meeting with the chemists was held but with a small program from the engineers. The engineers did not meet in 1921.

Shortly after the 1921 meeting of the Hawaiian Chemists Association, a movement was started to combine with the Hawaiian Engineering Association as their aims were so similar and so many members belonged to both. It was also suggested that a new section be formed to include agriculturists. A poll of the membership of both showed that over 90% were in favor of such a consolidation. In March 1922, a committee met to draw up plans for a new organization, to be known as the Association of Hawaiian Sugar Technologists. The first annual meeting took place November 15-18, 1922. By October 1923 the total membership was 328 with section membership divided into: agricultural 75, chemical 118, engineering 105, and unclassified 30; there were 32 non-residents. There was a steady growth in membership which reached 820 in 1938—520 local active members, 80 local associate members, and 220 non-resident members.

The papers presented at the annual meetings of the new association were printed as a proceedings, starting with 1922. Many changes were made at an eventful meeting held in 1931. A program committee was formed to coordinate the activities of the Chemical and Engineering sections and this later led to the consolidation of these two sections. Local sections were set up for each island to hold meetings during the year. Suggestions were made to form sections for pineapple people and plantation accountants, but these proposals were later dropped.

During the years from 1929 to 1937 the local active or plantation and agency membership remained at about the same level, but there was a considerable increase in the local associate membership and an even greater increase in the non-resident membership. By the 1937 meetings the membership was 64% local active, 9% local associate, and 27% non-resident. It was felt by some that the relatively large non-resident membership was encroaching too much on the territory of the International Society of Sugar Cane Technologists which had been founded in 1924. In 1937, the President appointed a committee to consider a possible reorganization of the association. This committee drew up a new constitution which made many changes such as limiting membership to local residents, combining the chemical and engineering sections into one, limiting the holding of elective office to active members, enlarging the Board of Governors, and centralizing control on Oahu. The proposed constitution was submitted to the membership and was approved by a large majority. An organizational meeting was held in May 1938 and the present Hawaiian Sugar Technologists came into existence.

When in 1778 Captain James Cook became the first Western man to discover Hawaii, he found sugar cane growing about the Polynesians' huts. They used cane only for chewing—not sugar-making.

Records say an unnamed arrival from China was the first to try sugar-making in the Islands in 1802. He brought over a stone mill from China and ground cane on Lanai, now an exclusively pineapple island.

During the intervening 23 years of the present organization, many changes have taken place. The constitution had major revisions in 1948, 1954 and 1959. In 1948, an Industrial Relations section was added to Agricultural and Chemical-Engineering to make three sections. After the 1952 annual meetings, it was proposed to reorganize into seven sections—Agricultural, Automotive, Chemical and Engineering, Cultivation and Weed Control, Harvesting, Industrial Engineering, and Industrial Relations—in order

In 1837, Ladd & Co. shipped its first crop, 2.1 tons of sugar. This was the start of a flow of sugar to the Mainland which amounts today to some one million tons a year.

to represent more adequately the fields of interest of the membership. In 1953, the Board of Governors of the organization decided to program the 1953 annual meetings on the basis of these sections as a trial. This reorganization was adopted by constitutional amendment in 1954. By 1959, considerable pressure had developed to reduce the number of sections and the constitution was again amended to provide for only two, Factory and Field. However, membership of the Program Committee, which is in charge of programming the annual meetings, was left at seven plus a chairman in order to maintain the flexibility considered necessary in 1952 to represent all the interests of the membership. It seems apparent from this record of constitutional changes that the organization has responded to the desires and needs of the members.

Annual meetings were held in 1938, 1939 and 1940 at the Experiment Station and in 1941 at the Moana Hotel. There were no meetings from 1942 to 1944 due to war restrictions. In 1945, the Agricultural Section alone met in December, while the Chemical-Engineering Section did not meet until February 1946. The meetings in 1947 were held at the Agricultural-Engineering Institute at the University of Hawaii. From 1948 to 1951 the annual meetings were held at the Experiment Station where an auditorium had been completed in 1949. In 1952 it was decided that the first-day attendance, when all sections met in a general session, had outgrown the auditorium. From 1952 through 1955 the general session on the first day was held in the Palace Theatre near the Experiment Station, in 1956 in Dillingham Hall at Punahou School, and in 1957 at the Hawaiian Village Hotel. No meetings were held in 1958 due to the four-month sugar strike which took place early in the year. During these latter years it had become increasingly difficult to accommodate the meetings of the seven individual sections at the Experiment Station. Since the Princess Kaiulani Hotel had developed what was considered to be the best convention facilities for the society's requirements, the 1959 meetings were held there. These meetings were highly successful, consequently the hotel has continued as the convention site for the H.S.T.

There can be no question that the Hawaiian Sugar Technologists have played an important part in the technical development of the Hawaiian sugar industry. From the small group of 29 men who founded its parent organizations, it now has some 1,360 members, residents of Hawaii, who are either directly employed in the sugar industry or who are interested in its objective—"the study of the sugar industry, in all its aspects, and the promotion of its welfare."

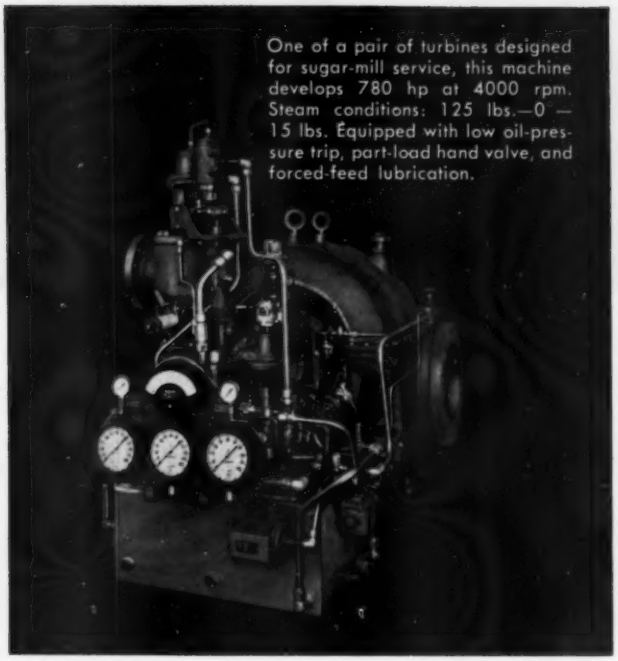
■

American Sugar Establishes Automation Fund

A two year contract signed October 11, between American Sugar Refining Company and the Sugar Workers Council of the International Longshoremen's Association establishes an automation fund designed to assist employees in retraining, obtaining new jobs or starting their own businesses, if displaced by the introduction of new machinery. The fund covers employees who have been with the company for a minimum of five years and pays up to $3,700. The new two year contract applying to 800 employees in the Brooklyn refinery and 600 in the Philadelphia plant, also provides a 3½% pay increase, effective October 1st, 1961 and a second 3½% raise on October 1st, 1962.

Sugar Club Elects New Officers

With 232 members in 10 nations, The Sugar Club (formerly Sugar Club of New York) has achieved real international status as outlined in a letter to the membership by Robert H. Shields, the retiring president. During the season now ending, said Mr. Shields, nine speakers from six different nations led the Club discussions. Election of new officers for one year terms starting October 1, 1961 have been announced. William D. Lamborn, assistant vice president of Lamborn & Company, has been elected president of the international forum of sugar leaders. Joseph L. Fraites, vice president of Czarnikow-Rionda Company and Charles S. Lowry, president of Lowry & Company, have been elected vice presidents of the Club. Charles Azarow of the Pepsi-Cola Company has been re-elected treasurer and Arthur B. Lunde, B. W. Dyer & Company, has been re-elected secretary. A printed volume of all speeches delivered at the Club during the year will be distributed to members and to a select list of libraries throughout the world.

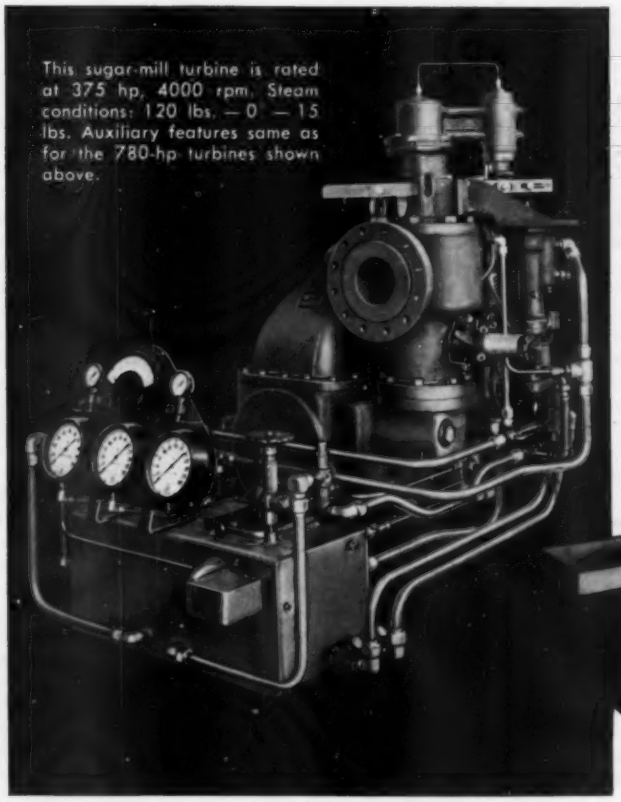


One of a pair of turbines designed for sugar-mill service, this machine develops 780 hp at 4000 rpm. Steam conditions: 125 lbs.—0 — 15 lbs. Equipped with low oil-pressure trip, part-load hand valve, and forced-feed lubrication.

These Terry turbines were built to provide continuous trouble-free mill power throughout the grinding season . . . for crop after crop after crop. Their design, which is based on more than fifty years of experience in the manufacture of turbine drives, combines efficiency with stamina and maintainability.

Wheels, for example, are made from forged-steel discs with an integral hub. Each wheel is carefully balanced individually, then the entire rotating element is tested for dynamic balance after assembly. Blades are made from high-grade stainless steel selected for its

These Terry mill-drive turbines stay trouble free crop after crop after crop



This sugar-mill turbine is rated at 375 hp, 4000 rpm. Steam conditions: 120 lbs. — 0 — 15 lbs. Auxiliary features same as for the 780-hp turbines shown above.

ability to resist the corrosive and erosive action of the steam. Bearings are large and horizontally split so they can be rocked out of position without disturbing casing or rotor.

Each turbine was supplied with a variable-speed oil-relay governor, designed for fine regulation. Because the speed can be set at any point throughout the operating range while the turbine is running, mill speed can be regulated without the penalty of shutdown.

Ask for information on a Terry turbine to meet your particular requirements.

THE TERRY STEAM TURBINE COMPANY
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Internationalism, Diversification

MAJOR changes are taking place in Hawaii's great sugar agencies—commonly referred to as the "Big-Five." Even though sugar has slipped as top commercial money-earner in the Islands, the companies that drive the industry have not. They are growing through diversification and new management blood.

American Factors, Ltd. is the newest of the agencies, and one of the most diversified. Although it traces its ancestry back to 1849, Amfac was born in 1918, following the World War I take-over of H. Hackfeld & Co.

Sugar and merchandise operations were inherited from the German-owned firm, but from that point everything changed. Amfac is the first of the Big Five agencies to have relatively wide stock ownership, and the first with professional managers.

Wholesaling, retailing, sugar and insurance are the basic areas in which Amfac work. They are the largest sugar producers in the Islands. The six plantations, in which they have all or major stock ownership, produce 30% of the Hawaiian crop.

American Factors has gone international. They organized American Factors Associates as sugar consultants and agricultural property managers and developers, in 1959. The first major project was a non-sugar operation in Australia, jointly with Chase International Investment Corp. The project, now well advanced, calls for development of 1,300,000 acres in the Esperance Plains of Western Australia.

More recently, American Factors Associates has provided sugar consulting services for Taiwan Sugar Company and several South American organizations. Other major projects are likely to develop soon.

Last year, Amfac help found Sugar International. It is a joint-venture between American Factors Associates, Hawaiian Dredging & Construction Co. and J. H. Pomeroy and Co. The associated firms are interested in the design, construction and operation of any part of a sugar industry, world-wide.

Amfac's largest activity is merchandising. This totals some $62 million a year. Last year, the company rated as the 26th largest wholesaler in the U. S. with sales of $46½ million.

Amfac operates the largest department store group in the Islands. They also have the largest general insurance agency in Honolulu.

American Factors is big and financially strong. They will likely be a real factor in international sugar.

C. Brewer & Co., Ltd. is the second largest sugar producer in Hawaii. It is the oldest of the Big Five firms and the only one currently involved almost exclusively in sugar. The company is 135 years old, yet one of the most changed of the sugar organizations.

Brewer's first foreign venture was in 1959 when its reputation as a sugar producer brought it into a sub-contract agreement for a new sugar development in the Khuzestan Providence of Iran. Some 13,000 acres of wasteland located on the Dez River was planted to cane and a mill and refinery built. Brewer has since moved to a prime contractor's position with the Iran government, which is putting in the installation. The first crop, estimated to be 23,000 tons, will be harvested this year.

Brewer's second foreign venture was a 10-year management contract for a 23,000 acre plantation owned by Sociedad Agricola E Industrial, of Ecuador. Output this year is expected to be about 70,000 tons. The goal is to boost yields through application of Hawaii's advanced technology.

More recently, Brewer purchased Farjardo Eastern Sugar Associates in Puerto Rico. These properties include five sugar mills, a refinery, land and other assets. Some $15 million was paid, and operation will be by a wholly-owned subsidiary—Brewer Puerto Rico, Inc. A research center, technological training center and a $3 million expansion program are planned.

Brewer's output in Puerto Rico for 1961 is expected to be about 165,000 tons. Hawaiian output will be close to 300,000 tons on their 10 sugar plantations.

Brewer's philosophy of international operation is entirely different from that of American Factors. Boyd MacNaughton, president of Brewer, has said, "we have taken the position that we would not go in as a consultant except where we think it might lead to management or ownership." Amfac, on the other hand, provides consulting or management service on a fee or participation basis, with no long-term ties.

Aim Of Big Five Sugar Agencies

Illustrated above are the headquarters of the five great agencies that manage the Hawaiian sugar industry. Left to right: American Factors, Ltd.; C. Brewer & Co., Ltd.; Theo. H. Davies & Co., Ltd.; Alexander & Baldwin, Ltd.; and Castle & Cooke, Ltd.

Theo. H. Davies & Co., Ltd. is the smallest of the Big Five sugar agencies producing some 100,000 tons of sugar annually on three plantations. But, Davies was the first of the group to venture into foreign fields. Forty years ago Davies purchased a Philippine branch through Honolulu Iron Works, which is controlled by Davies' stockholders. (James H. Tabor is currently president of both T. H. Davies and Honolulu Iron Works—which still has the Manila branch.)

Honolulu Iron Works is known worldwide as a manufacturer of sugar equipment and they have constructed mills in many foreign areas. Much of the work is done through its New York branch.

Davies also entered the Philippines in the late 1930's with a branch office (Davies Far East) which operates as a sugar agency and as a wholesale dealer in aviation equipment, chemicals, construction and engineering supplies, oil, tires, paint, hardware and pipe.

Davies was founded in 1845 by British capital. It functioned as a Branch of a Liverpool, England, trading and shipping firm for some years. Theophilus Harris Davies joined the firm in 1857 and 11 years later the company took his name. The Davies family still has control of the stock of this ultra-conservative firm.

A steamship department, the oldest travel agency in Hawaii, and merchandise wholesaling, are other major activities of the Davies operation. They own more than half of Hawaiian-Philippine sugar company, in which other Big Five agencies have stock. The Far East office is agent for this plantation and three others in the Philippines. Most of the sugar from these centrals is sold on the U. S. east coast by Davies' New York office.

Alexander & Baldwin, Ltd.: All of the Big Five agencies, except one, started plantations, or at least controlled them. The one exception is Alexander & Baldwin which was started in 1900 by a sugar plantation to be their Honolulu office.

A & B was established by the family-controlled Mauai Island empire headed by the Hawaiian Commercial & Sugar Co. HC&S is today the largest U. S. sugar plantation.

A & B has been undergoing many management changes within the past two years. They are wealthy and have more liquid capital than the other Big Five agencies. More cash is expected shortly when Honolulu Oil Co. liquidation is complete. This may bring in as much as $25 million.

A great deal of expanding could be done with this much money, but A & B has given no indication as to where they are going. So far, there is no mention of foreign sugar operations—but this can't be discounted as a possibility.

A & B has been a conservative company through the years. The only recent development they have made and through HC&S, is a joint venture with Seagram and Sons for the establishment of a rum plant on the Island of Maui. This is the first commercial liquor-making operation of any substantial size to be started in Hawaii, but it isn't large enough to consume much of A & B's bankroll.

Castle & Cooke, Ltd. is the largest of the Big Five agencies, and proportionately least involved in sugar. Organized in 1851, the firm has more diversification than any of the Hawaiian agencies, but their sugar operations have remained static.

C&C turned out about 170,000 tons of sugar last year on three plantations—Eva Plantation Co., Kohala Sugar Co. and Waialua Agricultural Co. However, sugar is not considered in the current $117 million expansion program of the company.

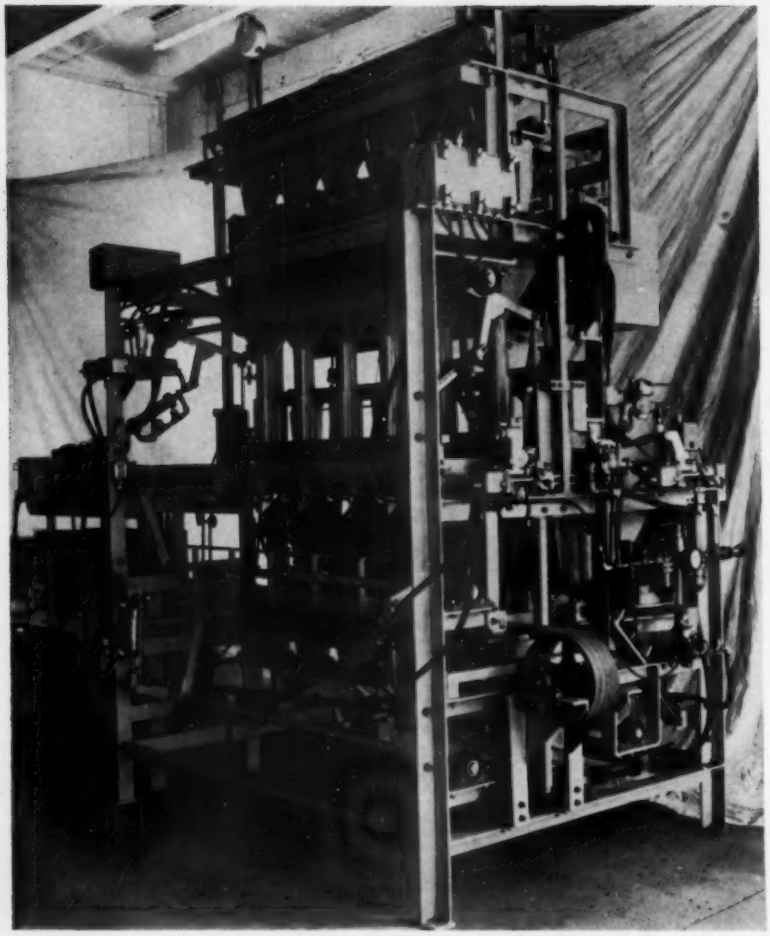
Castle & Cooke has increased its diversification since the end of World War II, primarily through subsidiaries. It now has interests in pineapples, seafoods, land, electronics, manufacturing and cattle.

Faced by a cost-price squeeze in pineapples, much as in sugar, Dole Pineapple Co., a new subsidiary of Castle & Cooke, is exploring Taiwan and Puerto Rico as growing sites.

President Malcolm MacNaughton of Castle & Cooke recently commented, "we consider our real opportunities for growth and development lie outside of this State."

IMPROVE THE APPEARANCE OF YOUR FILLED BAGS

With a Merrifield Type 210 Automatic Feeding, Filling and Closing Machine



The Merrifield Type 210 completely Automatic Packaging Machine is built in two sections. The first section shown above automatically feeds the empty bags from magazines, automatically fills the bags from net weight scales and automatically discharges the filled bags to the automatic closing station. The start of the closing station only is shown in the above.

The Merrifield Type 210 Automatic Closing Station may be used or any other make or system of closing may be used. Merrifield Type 210 Automatic Closing Machine is an Automatic Settling, Forming, Tucking, Spacing and Sewing Machine.

With the Type 210 Automatic Feeding and Filling Machine the empty bags are placed in six bag feeding magazines. These magazines hold a 20 minute supply of bags.

The Machine automatically and simultaneously feeds six empty bags to the six filling spouts. The scale automatically and simultaneously fills the six bags.

The six filled bags are automatically and simultaneously discharged to the conveyor belt which delivers the filled bags to the closing station.

Compressed air is used for operating the bag feeding operation. 16 C.F.M. at 120 P.S.I. is required. The standard voltage for the scale is 110 volts, 60 cycles, single phase. The maximum amperes is 15. The standard motor for driving the settling and spacing machine would be one horse power, 440 volts, 3 phase, 60 cycles and the motor for the automatic sewing machine would be one horse power, 440 volts, 3 phase, 60 cycles.

By using six magazines and six filling spouts a higher speed may be obtained than when using only one filling spout, also a greater number of bags may be placed in the bag feeding magazines. It also eliminates the necessity of split second timing. The adjustments and operation are very much simplified and require less mechanical skill for operation than with precision high speed timing. For granulated sugar the speed of this machine is 50 bags per minute for the 2 pound size, 45 bags per minute for the 5 pound size and 35 bags per minute for the 10 pound size.

J.D. MERRIFIELD & SON

ROCKY FORD U. S. A. COLORADO

All the raw sugar produced in Hawaii is handled in bulk form. Special bulk trucks haul the sugar to five storage-shipping plants at Island ports. Bulk freighters can carry more than 16,000 tons.

Changing Face of Hawaiian Sugar Industry

By Roy J. Leffingwell*

THE Hawaiian sugar industry has gone international. They have long had holdings in Philippine centrals and supplied sugar mill equipment around the world, but today there are new and more far-flung interests.

Not even the heads of Hawaii's so-called "Big Five" agencies can tell you specifically where they are heading, as this is a pioneering venture. No one has previously undertaken such a wide search for sugar opportunities.

Behind the urge to diversify and expand to new areas is the scientific know-how developed by the Hawaiian industry. This has come from spending lots of hard-earned money on research—starting in 1895. Hawaii's research program has been rapidly expanded and today more than $2 million is spent each year searching for new knowledge as to how sugar can be produced more efficiently.

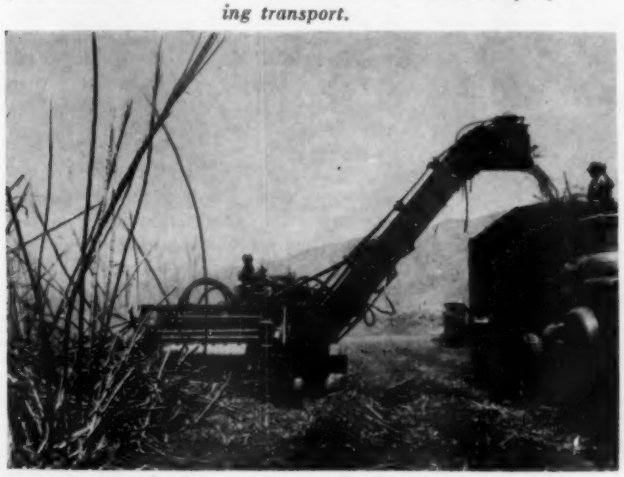
Despite the obvious success of applying research to sugar production, the Hawaiian industry has not profited to the extent that they should, due to labor problems and a marketing trap.

Unions have seldom been able to recruit agricultural workers. The mass of field workers are itinerant and move with the harvest. Even on the U.S. mainland, there have been few successful attempts to unionize agricultural workers in the field. But, as Hawaii harvests 9 to 11 months of the year, and has long had a labor shortage, plantation laborers have year-round jobs. Workers have been imported from Portuguese Islands, China, Japan, the Philippines and other areas to produce sugar. When sugar companies have this investment in labor they hang onto workers.

With year-round labor, the union found the setting ideal to move in. And, move in they did in 1946. It was only weeks before all but a minor fraction of the workers were union members. The situation has changed little since.

* The author headed public relations for the Hawaiian Sugar Planters' Assn. for 11 years prior to opening his own consulting office in Honolulu in 1957.

Various types of mechanical harvesters are in use. This experimental model cuts and loads the cane onto an accompanying transport.



Cane which has been cut by an HSPA-designed cut-windrow harvester is loaded onto a Hilo trailer by a heavy duty cane grab.

Not only has the union hiked pay rates about six times the 1946 rate, labor strikes and work stoppages have probably cost the industry even more. Only with vast technological developments, which increased the productivity of workers several times, has it been possible for the sugar plantations to exist. As an example of this development, 24 tons of sugar were produced annually by each Hawaiian sugar worker in 1940. Last year, each worker produced 67 tons of sugar.

It is ironic that the Hawaiian sugar industry is competing in production costs against "cheap" American labor. The United States Department of Agriculture lists the average earnings and fringe benefits of Hawaiian sugar workers for 1959 as slightly more than $2.10 per hour. Puerto Rico paid 50½¢ per hour, plus non-cash benefits of two to four cents. Beet sugar producers paid less than 95¢ per hour, plus two to four cents for benefits. Louisiana's wage was 71¢ per hour, plus two to four cents in benefit costs. Agricultural workers in the U.S. are exempt from the $1.25 minimum wage law.

Marketing of Hawaiian sugar has long been a problem due to distance from market and for many years the uncertainty of a market. One of the forces behind the overthrow of the monarchy in Hawaii and the annexation of the Islands by the United States was a market for sugar.

With annexation by the U.S., Hawaii still was a second-class citizen in many ways. Therefore, it behooved the sugar producers to establish a market for their product. They logically felt that the surest way was to put their trade-named brand of sugar into the hands of consumers. This, the Hawaiian industry has done.

The California & Hawaiian Sugar Refining Corporation was organized in 1906. It is an agricultural cooperative owned by all the Hawaiian sugar producers. C&H refines and markets most of the Island's output.

This appeared to be sound marketing, and for many years it worked well. There was no over supply of sugar in the Western part of the U.S. and C&H had an enviable position. But, beet sugar producers started heavy production in these same Western states. They grew sugar virtually at the back door of their customers. With mechanization and increasing skill in processing, cost of production went down and quality went up.

Under the U.S. Sugar Act each American sugar producer is allowed a quota. No more sugar is allowed into the country than required to meet the market. However, there is no allocation as to where producers may sell their sugar. As sugar is a heavy commodity and freight rates are high, the seller who disposes of his sugar close to the refinery, or beet plant, makes money. But, if the refiner is forced to ship it long distances to market, his profits will be greatly reduced.

This is the economic fact which has caught up with C&H and the beet sugar producers in the Western half of the U.S. There is considerably more beet and Hawaiian sugar in the area than can be consumed. The producer, who must ship his products to the Chicago or other mid-Western areas, will take a loss. Consequently, competition is fierce for local sales in the West. This has led to price cutting, extra-heavy advertising budgets and many other expenses. All of this has cut into Hawaii's profits. C&H estimates their returns will be $4½ million less this year than last because of the competitive beet situation. And, the future offers no encouragement.

The Hawaiian industry is not talking about moves that they might make to improve their marketing position. However, one step which could be taken is to junk the idea of selling Hawaii's sugar to the consumer and go into the raw market. This would entail a complete reversal of policy and the disposal of the vast C&H operations, including the largest cane refinery in the U.S. Its a major step, but not to be entirely discounted as a long-range possibility.

14 years later . . .

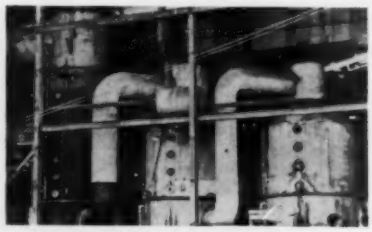
ANOTHER ST. MARY INSTALLATION

The new evaporators at Evan Hall Sugar Factory, with a capacity of 6,000 tons a day, are the largest in Louisiana and among the largest in the world. In 1946, St. Mary fabricated the triple effect evaporator for Evan Hall. In 1960, the factory turned to St. Mary again—this time for both design and fabrication.

The new unit, 44% larger than the old, permits operation in the face of emergency weather. It will pay for itself within 10 years, and will last indefinitely.

St. Mary Iron Works has been working hand in hand with the sugar industry since 1900. Call on us whether you're building a complete new plant or adding a single piece of equipment.

The 1946 unit fabricated by St. Mary Iron Works is a 12'-diameter triple-effect evaporator with a heating surface of 25,000 sq. ft. It has been "retired" and is used only on a stand-by basis, every 10 days when the new unit is being cleaned.



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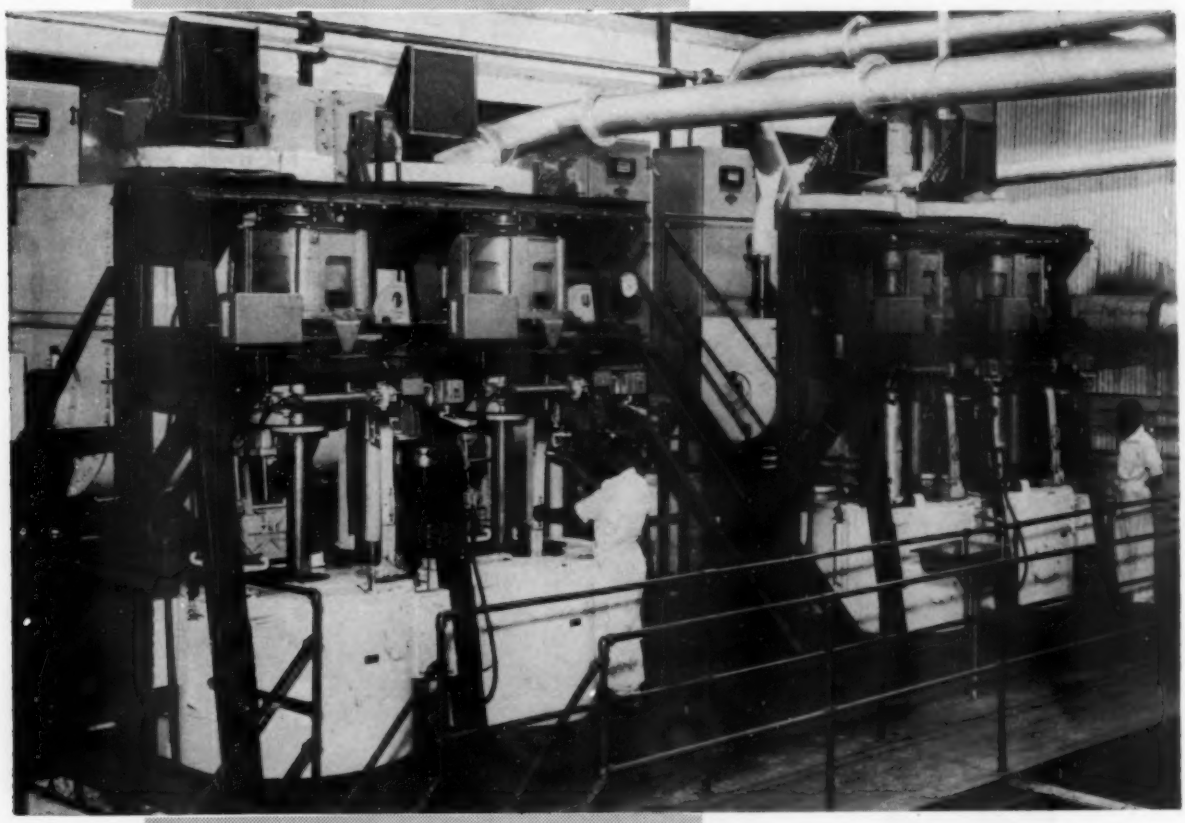

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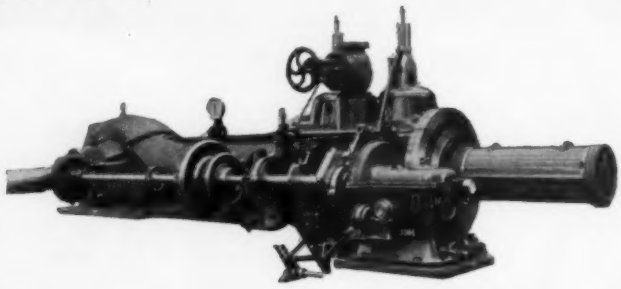

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The modern type:
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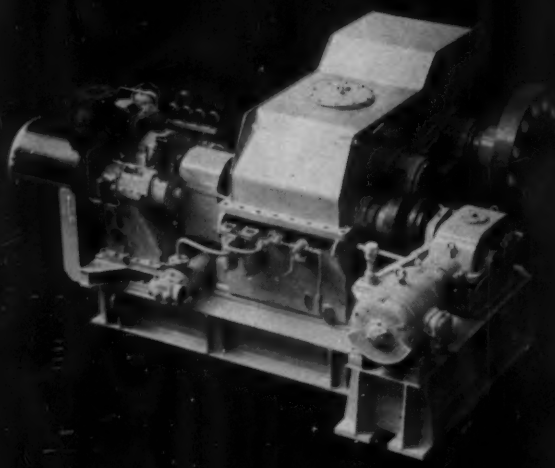

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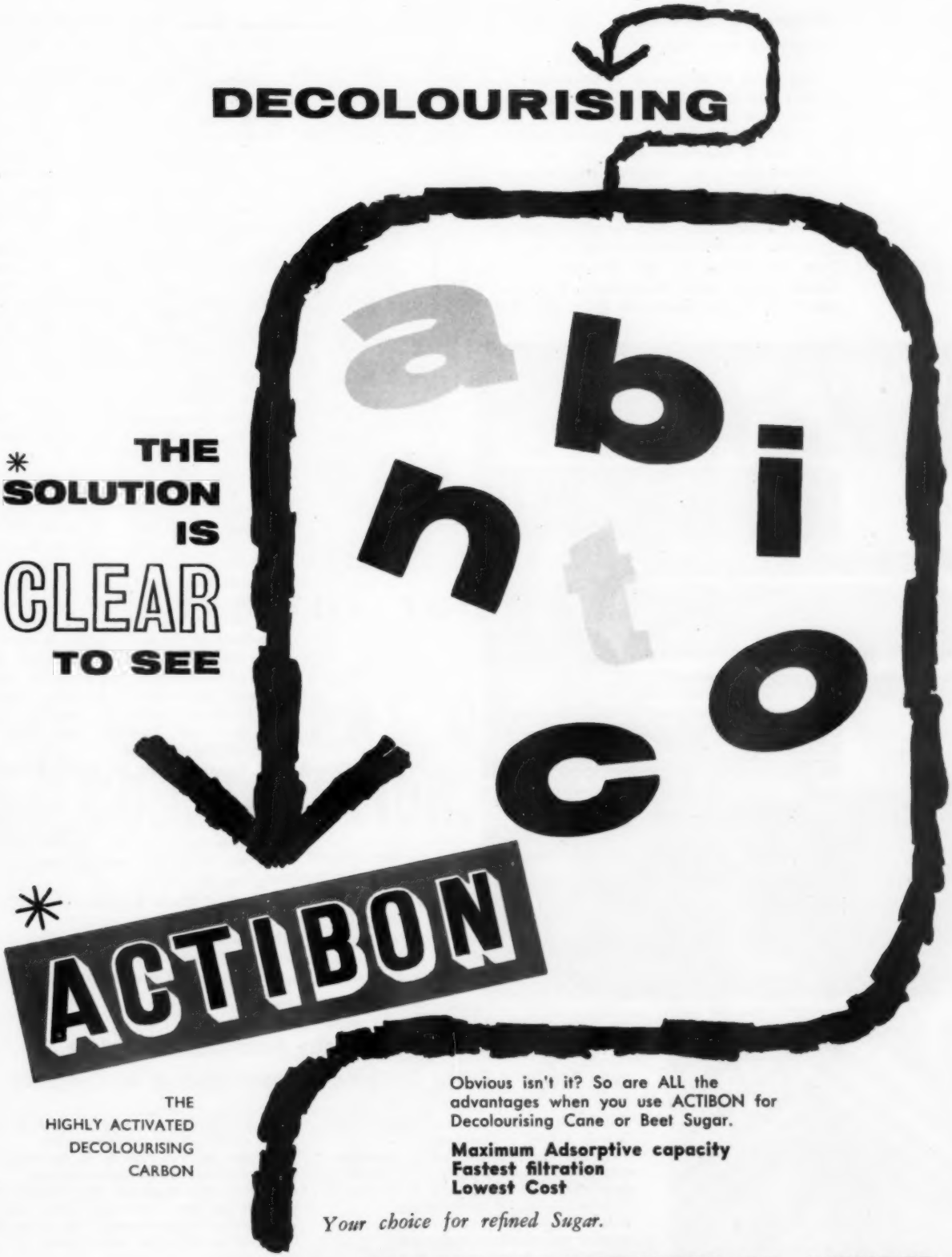

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Program & Abstracts

(*Continued from page* 39)

vices such as lubricating oil filters have become extremely important. This critical need has been met by acceptance of full flow filtration which differs from other techniques in that it continually filters the entire oil stream passed to moving or lubricated parts. Improved economy is gained since this filtration equipment operates one hundred per cent of the time, handling all of the oil stream at efficiencies acceptable to the oil.

10:45-11:45 AM—**Dry Air Cleaners**—*John Breathed*

8:30- 9:30 AM—**Coral Stone and Phosphate Requirements of Sugar Cane on Hilo and Hamakua Coast Soils**—*Dr. H. F. Clements*

During the past several years Brewer's research organization, cooperating with the University's Agricultural Experiment Station, has been involved in an intensive program aimed at understanding the calcium requirements as distinguished from the phosphorus requirements of sugar cane in the very acid soils of the Hilo and Hamakua Coasts. In the course of this study, it has become clear that there are several factors involved resulting from the use of coral stone. Even though all of the calcium and phosphorus nutrient needs of the cane crop are satisfied, there is an additional response in cane growth to coral stone applications, traceable to the changes in the soil pH. It seems clear now that this is not due to the pH change *per se*, but that its is related to the indirect effects of the pH change on the concentration of toxic materials such as iron, aluminum, and manganese in the soil solution, and/or a general improvement of the soil environment for root growth and absorption activity.

This is dramatically revealed by the fact that coral stone depresses the amount of manganese absorbed by the plant and greatly stimulates the absorption of phosphorus, even though the amount of phosphorus in the coral stone itself is negligible. The Soils Division of the University, cooperating on this project, also shows the reduction of aluminum in the soil solution in certain of these areas, and a marked reduction in the absorption of iron by the plant, as revealed by x-ray spectrographic analysis. Data supporting these different developments will be presented, and Brewer's coral stone program will be described.

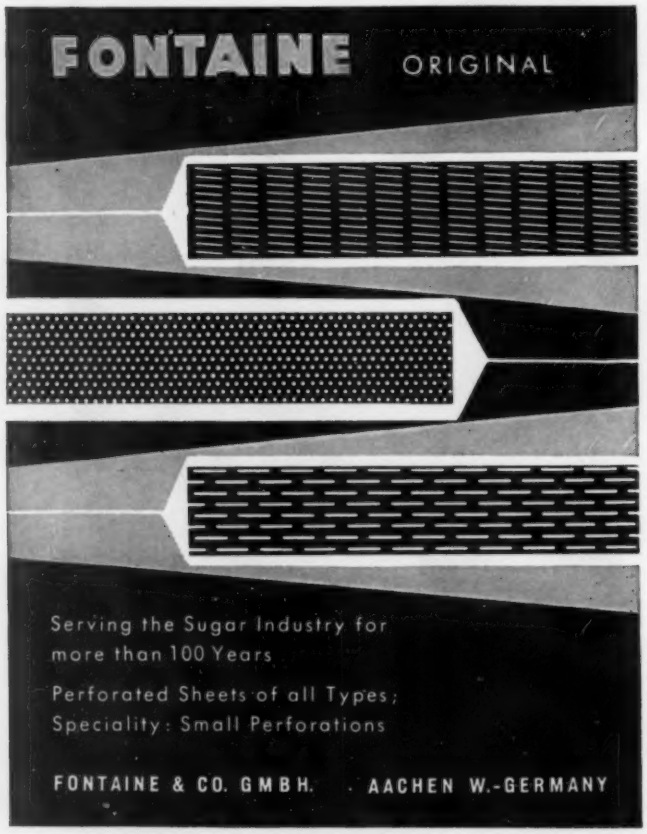
9:30-10:00 AM—**Aerial Fertilization at H.C. & S. Co.**—*John W. Sakuma*

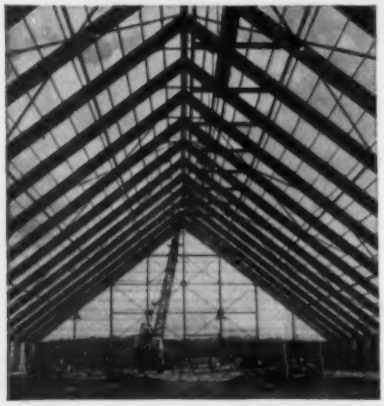
A report on the results of aerial applications of phosphate and nitrogen on the irrigated fields of H.C.&S. Co., covering distribution, economics, and comparison with irrigation application.

10:15-10:45 AM—**Handling of Bulk Fertilizer**—*W. Carroll Duke*

Methods available for bulk handling of solid and liquid fertilizers.

10:45-11:45 AM—**Summary and Conclusions**—*Dr. M. B. Russell*





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facts about sugar

NEW YORK, SEPTEMBER 28, 1961: Secretary of Agriculture Freeman on September 21 announced that the Department was considering a 1962 sugar quota of 9,500,000 tons, which would be 200,000 tons below anticipated needs; and also the establishment of domestic and foreign quotas other than Cuba at 3,175,378 tons for the first six months of 1962. B. W. Dyer & Company, Sugar Economists & Brokers, believe that this highly unusual announcement was made in lieu of reducing the 1961 quotas in order not to disturb existing commitments.

The statement which accompanied the announcement was mainly as follows: "During the 10-month period ended August 31, 1961, distribution of sugar for consumption in the continental United States totalled 7,795,000 short tons, raw value. Considering the quantity of sugar distributed in September and October of recent years and prevailing factors affecting current rates of distribution, it is estimated that distribution during September and October 1961 will bring total distribution for the 12-month period ending October 31, 1961, to about 9,450,000 short tons, raw value. Based on expected distribution during that 12-month period and allowing only for increased consumption due to the normal increases in population and for refining losses, the quantity of sugar needed in the calendar year 1962 is expected to be not less than 9,700,000 short tons, raw value.

"Refiners' inventories of quota sugar at the end of 1961 are expected to be higher than those held at the end of many recent years. However, in view of current geographic and other relevant circumstances affecting raw sugar supplies, larger inventories in the hands of refiners are appropriate to adequately assure a continuing flow of supplies for consumers.

"Prices for sugar declined during July and August. A general weakness in prices also has been reflected in the quotations on the New York Coffee and Sugar Exchange for contracts for delivery in the early months of 1962. Thus, it appears desirable to limit 1962 supplies somewhat below anticipated minimum needs in order to achieve prices which will fairly and equitably maintain and protect the welfare of the domestic sugar industry. . . ."

Under the Sugar Act, the Department of Agriculture is required to set quotas sometime in December. Consequently, replacement authorizations for the Cuban share, which would amount to 1,574,622 tons for the first six months of 1962, were not established, but it was stated that "Additional supplies of sugar can be made available to the extent needed. . . ."

The domestic (#7) spot raw sugar price advanced three points to 6.06 on the day after the announcement, while November futures closed six points higher and March 1962 futures went up five points. On September 28, the spot price advanced to 6.10. Refined sugar basis prices during September generally were unchanged, but consumer bundles were increased in Northeastern areas.

The U. S. Department of Agriculture has proposed a regulation to tighten restrictions on the importation of sugar containing mixtures and products. Under the proposed regulation quota restrictions apply to the "total sugar content" of any sugar-containing mixture or product containing more than 10% total "sugars" that is to be used as a sweetener or in the manufacture of any product in the replacement of sugar or from which sugar is removed. Sugar quota limitations will not apply to the sugar content in final products such as candies, canned fruits, meats and vegetables and specialty food items which have long been recognized for qualities other than primarily as a sweetener, or to mixtures and products which only incidentally contain sugar and in relatively small quantities. In making the announcement, it was stated: "Recently there has been a significant expansion in the quantities and varieties of such mixtures and products imported and proposed to be imported." The tonnage of sugar in such products has grown from 19,953 short tons in 1955 to 37,466 tons in 1960.

Sugar Prices—September 28, 1961

Duty Paid Bulk (#7)		
Raw Sugar N. Y.		**6.10**
Average #7 Raw Sugar		
Jan. 1 to September 28		**6.29**
Refined Sugar Gross N. Y.		**9.30**
#8 Raw Sugar (f.o.b. and stowed)		**2.75**
Average #8 Sugar		
Jan. 1 to September 28		**3.02**
Futures Prices	***Contract #8***	***Contract #7***
Nov. 1961	**2.67**	**6.12**
March 1962	**2.74**	**6.23**
May 1962	**2.74**	**6.24**
July 1962	**2.79**	**6.30**

The House Committee on Agriculture on September 7 issued a resolution to the effect that it would regard with extreme disfavor any action by any representatives of the U. S. at the International Sugar Agreement conference in Geneva implying that the U. S. would adopt any system of sugar importation other than fixed statutory quotas such as have heretofore operated so effectively under the Sugar Act. It also was resolved that those in charge of making purchases of Cuban replacement sugar in 1962 be instructed to give clear preference to those countries which offer to buy U. S. agricultural commodities in return. Also, that allocations to supply the domestic "growth factor" be made to new mills in new areas.

The U. S. delegate to the International Sugar Agreement meeting, which opened in Geneva on September 12, refuted the Cuban and Russian charges that U. S. had cut imports, by demonstrating that they actually had been increased 32% between 1954 and 1960. He also pointed out that the U. S. could easily produce all of the sugar it consumes, but, starting in 1934, had held down domestic production for the purpose of increasing imports, and that Cuba had been the chief beneficiary. The U. S. opposed the Soviet suggestion that U. S. imports be made part of world quotas. It was pointed out that U. S. supply actions must be taken immediately and with finality and could not wait for the International Sugar Council to determine whether or not supplies will be made available.

World (#8) spot raw sugar prices declined from 2.82¢ per pound at the beginning of September to 2.57¢ on September 20. They later advanced to 2.85¢, and were 2.75¢ on September 28.

NOMINATIONS are requested from members of the sugar industry to select the "Sugar Man of the Year" for 1961—to receive the Dyer Memorial Award. Nominations must be received by B. W. Dyer & Company not later than January 8, 1962. The purpose of the award is to give recognition to some

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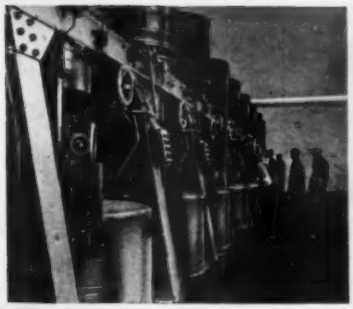

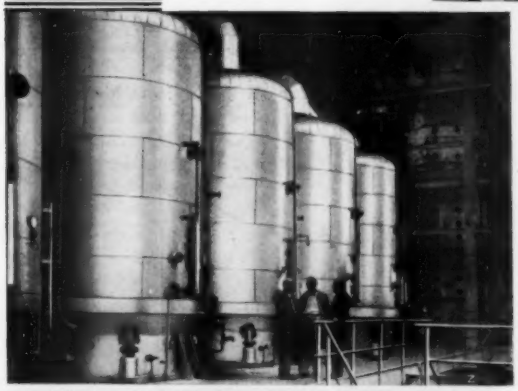

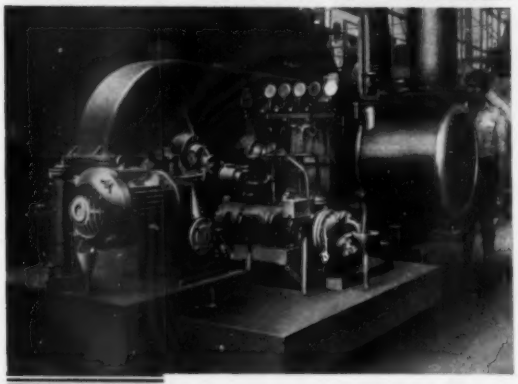

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AZU 129

sugar man making a significant and meritorious contribution to the sugar trade—particularly a new idea or a proven development. The first eligible person to nominate in writing the ultimate award winner will receive $50. It is hoped that this incentive will encourage the naming of some less known candidates as well as those prominent in the industry.

Hawaii Expects Million Ton Crop

HONOLULU, SEPTEMBER 28, 1961: The Hawaiian sugar industry is beginning to tell the public that they are not ready to give up, although they still have troubles.

This year, Hawaii will produce the first million ton crop since 1957, and there is some indication that political leaders next year might be interested in passing legislation taking excessive taxation off the sugar and pineapple industries.

Slator M. Miller, vice president-secretary of the Hawaiian Sugar Planters' Assn., laid the foundation for a slightly brighter outlook in a speech before the Honolulu Rotary Club in mid-September.

He said, "In all likelihood, sugar will constitute a stable portion of our economy for some time to come—the length of time depending upon the reasonably prompt and completely equitable manner in which our problems can be solved."

The industry official said Island sugar's "survival" hinges on the following:

1. "There can be a cessation in the cost spiral, particularly in labor costs."

2. The industry receives "the sympathetic understanding of the lawmakers of our state and our national Congress."

3. "We can effect further economies in production and find ways to continue increasing yields."

4. Sugar continues "to have the understanding and support of the people of our state."

5. "Our employes will recognize the vital need for utmost effort and cooperation in improving our production efficiency."

Mr. Miller warned that if problems can't be solved—"if the people, organizations, natural forces, political events and dozens of other factors involved do not cooperate or flow in our direction"—then the sugar industry "as we know it today will be in imminent danger of disappearing from our economic scene."

Without the sugar industry, it is "certainly doubtful if an equally productive use could be made of the 200,000-plus acres now in cane," he said.

Mr. Miller described the industry as having:

—The highest labor costs in the world for its type.

—A $5 million ocean freight bill to get its raw material to the Mainland for refining and sale.

—A bigger tax bill than any of its competitors.

—A market that has a million tons more of its product than it can consume.

—A commodity which hasn't increased substantially in price in 10 years although production costs have gone up more than 50%.

—A raw material subject to pests, diseases and changes of weather.

—As its principal asset, a highly perishable living organism.

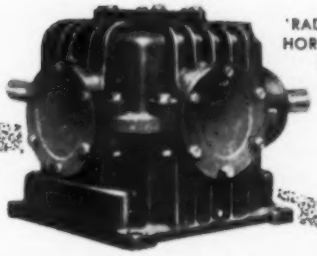
Sugar brings in between $140 and $150 million from the Mainland for the state economy, he pointed out.

It provides year-round jobs for 14,000 people. Its wage bill is $57 million annually and it spends another $37 million for materials and supplies, he reported.

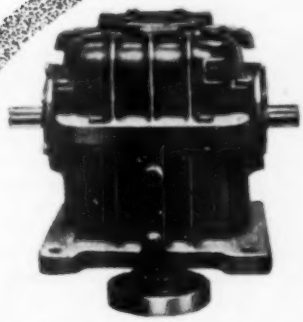
> The 81st annual meeting of the Hawaiian Sugar Planters' Association will be held in Honolulu, December 5 through 7.

Key to many of Hawaii's sugar problems center around their frantically competitive sugar marketing situation on the West Coast of the U. S. mainland. For years, Hawaii had an ideal operation in selling their sugar. All sugar growers participate in California & Hawaiian Sugar Refining Corp., which is located on the U. S. mainland West Coast. This company, as an agricultura' cooperative, refines and markets most of Hawaii's raws.

SPIRAL OF FALLING COSTS



'RADIATION' HORIZONTAL UNIT



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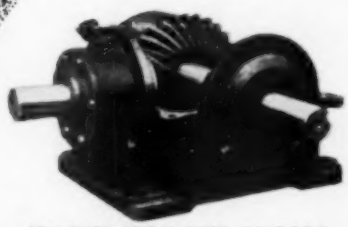

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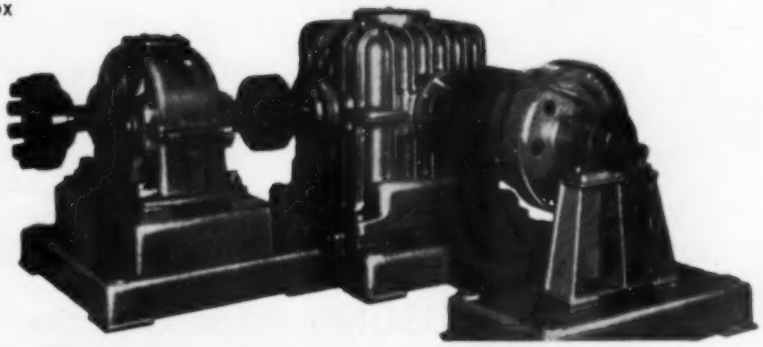

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This was an excellent arrangement, until the beet industry moved into the same area with major production. This region now has almost twice the amount of sugar that can be consumed. The sugar producer who must pay the freight to ship his sugar out of this area will cut down his profit. Therefore, the highly competitive fight for the West Coast market.

This competition has cut deeply into C&H's returns on sales, and into what Hawaiian producers get for their crop. The Island plantations had a return of $121.53 per ton for their raw sugar last year. This year, it is estimated that the return will be only $117 per ton.

There is refining capacity in other areas for Hawaii's raws, and shipment can be made through the Panama canal to any Gulf or East Coast port. But, it is hard for the Hawaiian industry to give up their traditional market for refined sugar on the West Coast. And, the industry has a large investment in C&H refinery at Crockett, California —the largest cane sugar refinery in the world.

However, bitter economic facts are facing the industry.

Drought on the Big Island of Hawaii continued "very serious" through the end of September. Rainfall has been negligible since April in the Kohala and Kau areas of the Island of Hawaii.

Water storage in reservoirs has dwindled to dangerously low levels and rationing of water for drinking may be necessary.

The year 1961 has been one of continuous drought on the Island. It is necessary to go back 44 years to find a comparable dry period.

Damage to the drought-hit sugar plantations will not affect current production so much, but it will result in serious losses in 1962 and 1963 crops.

Philip F. Conrad, assistant manager of Oahu Sugar Co., has been elected 1962 president of the Hawaiian Sugar Technologists. He succeeds John T. Moir, III, industrial engineer in C. Brewer's office in Hilo, who is current head of the sugar group.

Mr. Conrad began his sugar career as a foreman at the Waialua Agricultural Co. in 1946. He became assistant manager of Oahu two years ago.

Hopes are not dead for a paper mill for Hawaii. Nine Oahu Sugar Co. officials recently appeared before the Honolulu City and County Planning Commission and asked that 100 acres next to the plantation's mill be reserved for a possible paper plant.

It was stated that there are no definite plans to establish such a plant. However, the company wants the land available when a paper mill should prove feasible.

The Hawaiian sugar industry has long studied the possibility of manufacturing paper from bagasse. However, it was determined that at the present time, at least, such an operation would not be economical, primarily because demand for paper in Hawaii is far below the output of an efficient-sized plant.

One Oahu spokesman said the industry's studies showed that any paper mill should be located close to the bagasse supply—a sugar mill—and, "We're just looking into the future, trying to make the space available, if and when."

Barge Transportation For Puerto Rican Cane

San Juan, September 27, 1961: Guánica Central plans to inaugurate next year a system for transporting cane by sea from an area east of Ponce to the mill at Ensenada, farther east on the south coast. It is expected that this will considerably alleviate traffic congestion on roads in the southern part of the island. The project proposes the transportation by sea to Ensenada of all sugar cane produced by the Land Authority east of Ponce in the area generally known as Fortuna, and also from the region of Juana Díaz. The plan is to transport by truck to the sea and then by barge to Ensenada, about 900 tons of cane daily. This will permit the elimination from the highways of 25 units of tandem trailers. The

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Sugar Mills	*Cane processed Short tons*	*Yield % 96° Sugar*	*Production 96° Sugar Short tons*
Guánica	1,047,196	11.287	118,119
Mercedita	801,258	11.004	88,174
Aguirre	704,317	10.800	76,065
Coloso	741,106	9.925	73,554
Plata	525,422	10.022	52,657
Fajardo	514,891	10.157	52,297
Igualdad	479,691	10.227	49,058
Eureka	397,810	10.315	41,035
San Vicente	469,284	8.688	40,770
Cambalache	415,481	9.283	38,569
Santa Juana	335,285	10.414	34,918
Juncos	316,861	10.701	33,907
Los Caños	351,482	9.515	33,445
Rufina	319,293	10.429	33,298
Canóvanas	315,703	9.968	31,469
Lafayette	261,343	10.698	27,959
Monserrate	286,605	9.631	27,603
Juanita	269,982	10.052	27,138
Machete	261,987	10.268	26,902
Roig	279,605	9.505	26,576
Plazuela	290,657	8.996	26,148
Cortada	252,226	9.931	25,048
Constancia	227,758	9.597	21,857
Cayey	170,571	9.842	16,788
Rio Llano	178,185	9.052	16,129
El Ejemplo	147,556	9.803	14,465
San Francisco	123,554	11.701	14,457
Soller	145,793	9.381	13,678
Guamaní	123,113	11.039	13,590
Totals and averages	10,754,015	10.189	1,095,753

Land Authority harvests in excess of 100,000 tons of cane annually in this area. This means that a gross tonnage of over 160,000 of cane and equipment will be eliminated from the highways. If this test project is successful, Central Guánica plans to use the same system in other coastal sugar cane areas.

Donald J. Martin, president of C. Brewer Puerto Rico, Inc., which bought the local Fajardo Eastern Sugar Associates firm, has announced it is planning a research center for the purpose of increasing production of the five sugar mills acquired in the deal. It has also been planned to work in close collaboration with the Agricultural Experiment Station in the various research projects that this institution has under way for the purpose of improving the sugar industry. Mr. Martin has also announced that careful studies will be conducted for the purpose of extending the period of operation of the sugar mills and that his organization will work towards getting the best possible system for financing the sugar cane growers.

Central Coloso will have next crop a new system to collect cane juice samples for individual analysis of sugar cane delivered by different planters. The system was successfully used by Central Guanica during the last crop. It is semi-automatic, increases the number of samples taken and operates with high efficiency, eliminating most human errors.

Central Coloso also installed new tanks and equipment to ship blackstrap molasses through Aguadilla Terminal, where they also have equipment for handling raw sugar in bulk. Molasses handling was slow and expensive as transported before by trucks to the port of Mayaguez.

46 Louisiana Mills Grinding

New Orleans, October 2, 1961: By the time this report appears in print the 1961 Louisiana grinding campaign will be in full swing with forty-six mills participating and the prospects of a record production in sight. The latest Government Crop Report indicates that over seven million tons of sugarcane will be produced in Louisiana this season and this production, if realized, will be approximately 1,000,000 tons above the 1960 production. The experts believe that about six and a half million tons of cane will be ground for sugar and that the production, raw value, will be between 525,000 and 550,000 tons. This will be more sugar than has ever been produced in Louisiana.

The weather during the month of September, despite the threat of Hurricane Carla, improved considerably and the cane farmers have been able to complete their planting operations. This section was very fortunate that Carla decided to move into the Texas Coast because any high wind would have flattened the crop. This is truer this year than normally would be the case because of the continuous rains throughout the summer months. The roots of the cane plants are very close to the surface this year and very little force would be required to topple them.

The Annual Meeting of the American Sugar Cane League was held in New Orleans on September 28th and T. M. Barker, of Lockport, La., was elected President. Mr. Barker is the twenty-first president of this organization of Louisiana cane growers and sugar processors which was organized in 1922. Mr. Barker succeeds Warren Harang, Jr. of Thibodaux, La., who completed his second term in office on September 28th.

Other officers elected on September 28th were Ed. Schexnayder of White Castle, La., 1st Vice-President, Andrew P. Gay of Plaquemine, La., 2nd Vice-President, W. S. Chadwick of New Orleans, La., 3rd Vice-President, Josiah Ferris of Washington, D. C., 4th Vice-President, Gilbert J. Durbin of New Orleans, La., 5th Vice-President and General Manager, F. Evans Farwell of New Orleans, Treasurer, and J. J. Shaffer, Jr. of Houma, La., Secretary.

Elected to the Executive Committee of the League to serve during the coming year were Thomas H. Allen, Franklin, La., J. G. Beaud, New Iberia, La., Nicholas Bergeron, Thibodaux, La., P. L. Billeaud, Broussard, La., H. K. Bubenzer, Bunkie, La., J. Malcolm Duhe, New Iberia, La., Murphy J. Foster, Franklin, La., Ulysse Gonsoulin, Jr., New Iberia, La., F. A. Graugnard, Jr., St. James, La., Warren Harang, Jr., Thibodaux, La., Denis Lanaux, Lucy, La., Clifford LeBlanc, White Castle, La., J. Wilson Lepine, Thibodaux, La., John B. Levert, New Orleans, La., Earl G. Luke, Franklin, La., Richard McCarthy, Jr., New Orleans, La., E. W. McNeil, Cinclare, La., J. J. Munson, Houma, La., Charles C. Savoie, Belle Rose, La., Clay Terry, Franklin, La., Bronier Thibaut, Napoleonville, La., James H. Thibaut, Donaldsonville, La., R. J. Thibodaux, Houma, La., Ivan M. Wilbert, Plaquemine, La., Horace Wilkinson III, Port Allen, La. and M. V. Yarbrough, Youngsville, La.

Elected Honorary Members of the Executive Committee were L. A. Borne of Raceland, La., Wallace C. Kemper of New Orleans, La. and David W. Pipes, Jr. of Houma, La.

Up to the time of this report nothing has been heard from the Sugar Division in Washington regarding the dates of the Government Fair Price Determination for the 1961 Louisiana cane crop. The assumption is that the pricing period will begin October 6, 1961 and end on the last Thursday in February 1962, which is February 22nd.

As we approach the pricing period, the Louisiana industry is greatly concerned about the low price of sugar and the fact that two refineries that together purchased over a hundred thousand tons of raws last year on the season's average price have, thus far, refused to contract for Louisiana raws on the traditional basis this year. This has brought about a confused marketing situation that has not been adjusted at this writing.

Correction

The Editor
SUGAR Y AZUCAR
25 W. 45th Street
New York 36, New York

Dear Sir:

We were somewhat surprised after reading the article under the field mechanization section of the September issue of SUGAR Y AZUCAR because this magazine is usually very accurate in its estimates and statements. The first paragraph of this article reads:

"Australia appears to have progressed further in the widespread use of cane harvesting machines (as compared to various machines used to harvest cane in Hawaii) than any other area in the world."

This statement is obviously inaccurate.

The following two or three paragraphs are quotes from Mr. Deicke, Technical Advisor to the Queensland Mechanical Cane Harvesting Committee, in an address he made to the annual conference of the Australian Sugar Producers Association. Even he does not make any such claim but merely points out that the advance made in 1960 over 1959 was as follows:

"It is not suggested that they (the Harvesters) have reached the ultimate in their development but it has been demonstrated that they can be operated on a commercial basis."

The above statements of Mr. Deicke would indicate that the mechanical harvesting of sugar cane in Australia perhaps is about to begin and certainly is not meant to imply that the great production of sugar cane in Australia, needed to make some 1,500,000 tons of sugar, is even about to be harvested mechanically but, that for the first time, apparently, a start has been made.

When the above statements are considered in the light of mechanical development in Louisiana relating to its crop of sugar cane it is evident that Australia has not "progressed further in the widespread use of cane Harvesters than any other area in the world." On the contrary, Louisiana has harvested its 6,000,000 tons of sugar cane completely by machines since about 1947. This mechanization has progressed in Louisiana to a point where less than ½ of 1% of the total cane area is harvested other than by mechanical means.

The number of men used in the harvesting of sugar cane and the labor costs may be based on approximately the following:

4 Men—2 Harvesters and 1 man with 1 cane Loader will cut and load into vehicles 400 tons of cane per day with regularity. 8 additional men with high speed Tractors and Wagons will deliver this cane under ordinary circumstances to the field hoist so that overall 13 men will cut, load into vehicles and transport to the field hoist some 400 tons of cane a day. In most areas where the wage rate is not in excess of $1.00 an hour this would represent an approximate labor cost of something below $0.30 per ton of cane.

The Louisiana cane fields have become so much mechanized that even the small cane grower produces and harvests his cane mechanically. If he is not large enough to own his own cane Harvester he gets it done by commercial operators at so much a ton. To harvest the 6,000,000 tons generally produced in Louisiana some 600 Harvesters are in daily operation during the harvest season.

Speaking generally in Louisiana it is estimated that one man working approximately 250 days per year will produce and harvest completely a minimum of 500 tons of cane and a maximum of 1,000. We have every reason to believe that Louisiana is more completely mechanized in the harvesting of its sugar cane crop than any other area in the world with the possible exception of Hawaii.

We would like to bring this to the attention of the Editor of SUGAR Y AZUCAR so that he will have reason to know that any area just beginning commercial mechanization is only approaching something that Louisiana has been actually doing for some 14 years.

Yours very truly,

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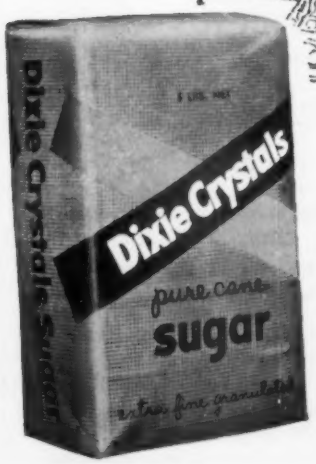

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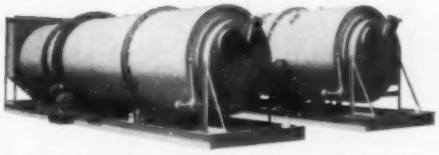

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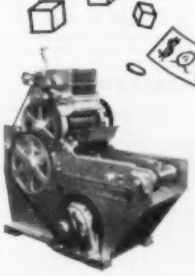

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Correction

Editor
SUGAR Y AZUCAR
25 West 45th Street
New York 36, New York

Dear Sir:

In your September, 1961 issue an article appeared which contains two substantial errors likely to be misleading to your readers.

We are referring to your article entitled "Fear Hawaiian Freight Rate Increase" on page 48. The article states that "an internal battle has broken out between Matson Navigation Co., in which major stock interest is held by four of the five Hawaiian sugar agencies and California & Hawaii Sugar Refining Corp., which is controlled by virtually the same group of men."

This statement is incorrect on two counts. First, there is no battle occurring and, second, even if there were disagreement, it could not properly be termed "internal." Actually C and H and Matson are two separate organizations which have quite independent interests. In this particular situation, it is vital for C and H to obtain the lowest possible shipping rates from Hawaii to the mainland in order to meet competition. Matson, on the other hand, is interested in making profits for its shipping.

Despite these divergent interests, both companies support bulk sugar tariffs 12-A and 17 and did so in the hearings before the Maritime Board Examiner.

C and H President Donald Maclean did testify that any increase in these tariffs would force C and H to consider other shipping arrangements. But this situation is best described as a normal competitive business dealing rather than a battle.

The article states in the following paragraph that "Matson . . . has proposed a new 10% freight increase, including bulk sugar." The fact is that the proposed freight increase does *not* include bulk sugar.

Perhaps the writer was confused because the Examiner who was assigned to the inquiry combined hearings on the application for a 10% increase, which does not affect sugar rates, with an inquiry on bulk sugar tariffs 12-A and 17 which C and H ships against. The proposed Matson 10% increase does not extend to these two tariffs.

We believe that a story correcting these errors should be included in your next issue. If you require more detailed information, we shall be glad to assist you.

Very sincerely,
MARSHALL VIRELLO
Director of Public Relations

Book Review

BY DR. PIETER HONIG

The Laboratory Manual for Queensland Sugar Mills by the Bureau of Sugar Experiment Stations, Fourth Edition, price Australian Pounds 1.10.0 per copy post free. Available from the Bureau of Sugar Experiment Stations, 99 Gregory Terrace, Brisbane B19, Queensland, Australia.

The Laboratory Manual for the technical control of the Queensland sugar industry has been published in its fourth edition. This book has been edited in an excellent way. It covers the definitions of technical terms as used in the chemical control in sugar mills, a good description of the laboratory instruments (optical, densimetric, volumetric and balances), sampling and reagents, and analytical methods as standardized in the Queensland sugar industry, in conformity with the recommendations of the I.S.S.C.T. and the I.C.U.M.S.A., with the calculations to be applied.

Special chapters are devoted to the chemical and technical control of boilers (feed waters and boiler waters) and steam characteristics, and the manual includes a very useful chapter on soil fertility tests for the determination of available fosfate and potassium and total replaceable bases.

A very practical and useful chapter covers first aid in sugar mills.

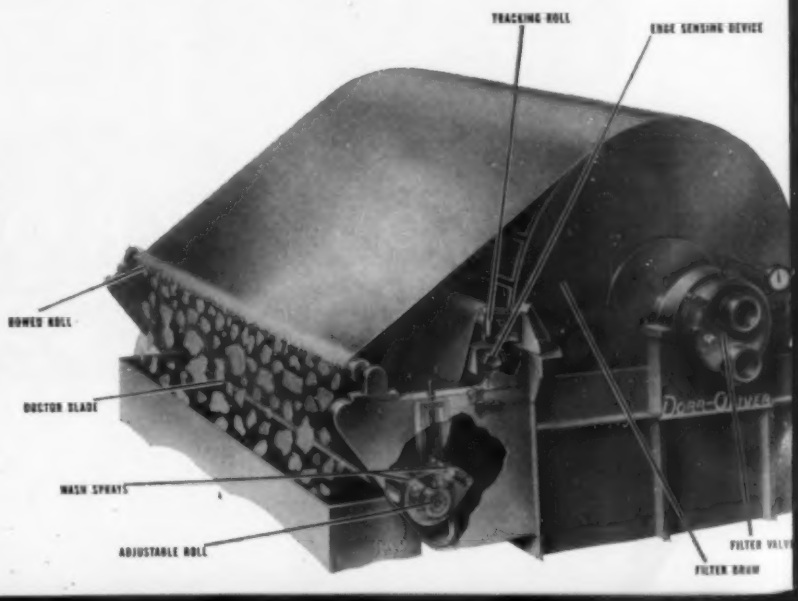
This manual has been printed in a clear, easily readable form and is well bound. This manual has to be qualified as one of the best laboratory manuals in the English language. For a number of companies the use of some of the tables will cause some difficulties, as volumes are given in Imperial gallons, but with conversion tables in a simple way all numerical values can be converted to the metric system, if so required.

Sugar laboratories over the whole world can derive great benefit by having this manual available in the library of the sugar factories. The tables are very complete and even some useful tables have been expanded as, for instance, the determination of reducing sugars by the Lane & Eynon method in high purity liquors, where a column has been added for liquors containing 0.14 to 0.50% reducing sugars on brix. This table is needed in many cases in refinery operations and is not found in most of the analytical handbooks.

■

Dorr-Oliver Introduces New Filter

A new version of the basic Oliver vacuum mud filter for the cane and beet industry which provides for continuous hydrostatic cloth backwash has been announced by Dorr-Oliver Incorporated. Designed to produce high filtrate clarity from muds which tend to blind the cloth, the Webtrol filter medium passes over a bowed discharge roll which removes wrinkles by spreading the web and provides initial separation of the cake for discharge. This is followed by the adjustable washing roll where the cloth is subjected to high velocity jet sprays and hydrostatic washing for final removal of surface solids. Finally, the clean medium travels over a tracking roll which is suspended so that it moves the belt and changes its direction of travel whenever the edge sensing device indicates a misalignment.



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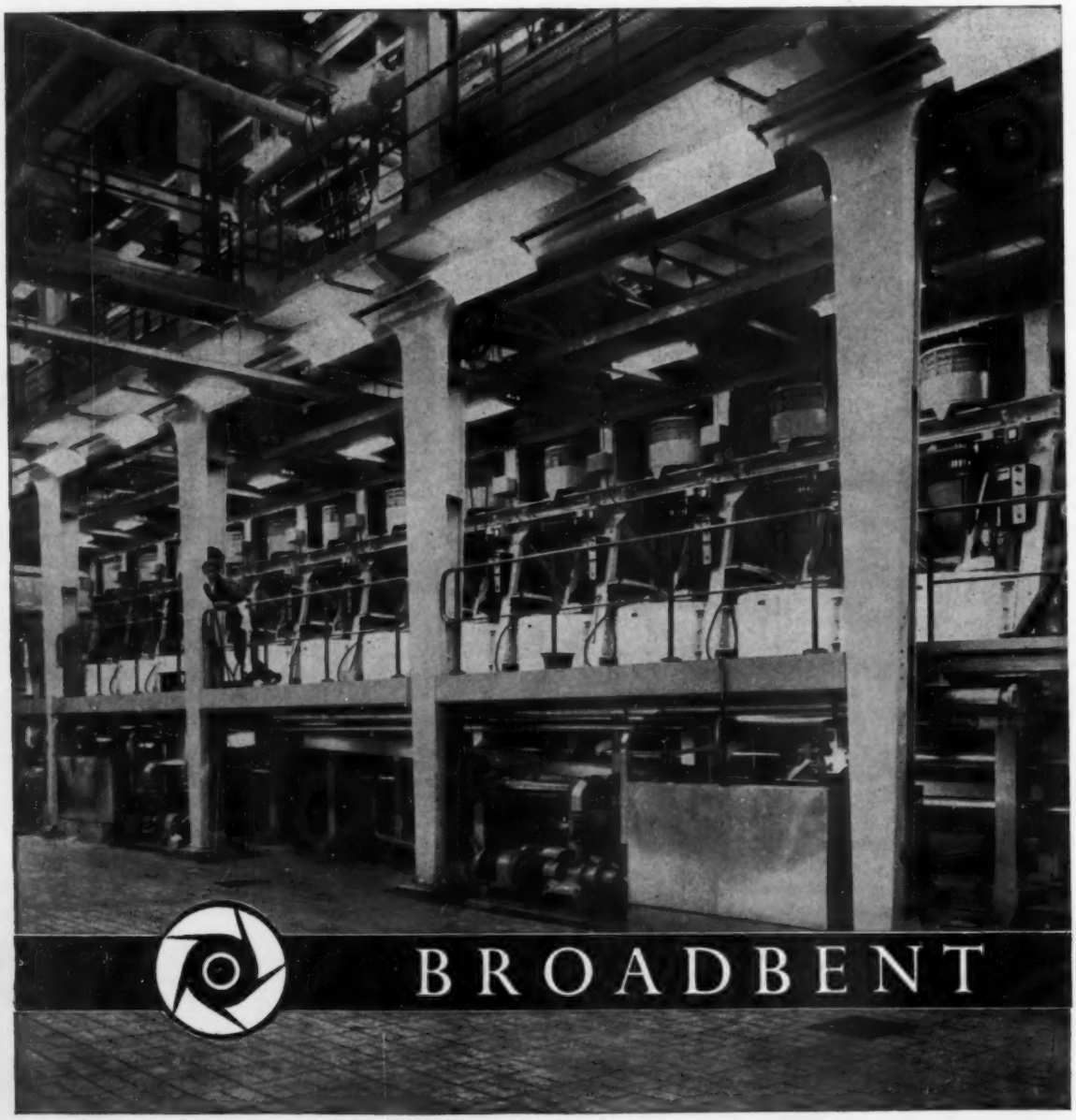

El Mensaje del Presidente

Los Tecnólogos Azucareros de Hawaii Hacen Frente a Graves Problemas

por John T. Moir 3rd.

Presidente, Asociación de Tecnólogos Azucareros de Hawaii

La Vigésima Reunión Anual de los Tecnólogos Azucareros de Hawaii (HST) se celebrará desde el 13 al 16 de Noviembre, en el Hotel Princess Kaiulani, en Honolulu.

Se ha preparado un programa que cubre todos los aspectos de la industria azucarera Hawaiiana, el cual será presentado y sometido a discusión ante una probable concurrencia de 550 miembros. El Comité de programas y publicaciones, que tiene como presidente a B. B. Alexander de la firma Theo. H. Davies & Co. Ltd., ha trabajado duramente para preparar una semana de labor productiva e interesante. Poco despues de terminadas las sesiones se imprime un opúsculo que recopila los trabajos presentados y su discusión, el cual se distribuye a todos los miembros.

Además de las sesiones anuales, se celebran durante el transcurso del año reuniones parciales en las cuatro islas productoras de azúcar: Kauai, Oahu, Maui y Hawaii, para mantener eficazmente informados a los técnicos azucareros sobre las nuevas ideas, prácticas, métodos y equipos. Además, como solamente una parte de los asociados puede asistir a las sesiones anuales en Honolulu, las reuniones locales en las islas permiten estimular e informar a los que no pueden participar de las sesiones anuales. Se estimula a los disertantes invitados, procedentes de otras regiones del mundo, a concurrir a tantas reuniones en las islas como lo permita el tiempo.

El Comité de la HST sobre Métodos de Control de Fabricación se reune periódicamente cada año para revisar los mejores cálculos sobre control y mantener al día el conocido manual "Métodos Oficiales de la HST para el Control de las Fábricas de Azúcar de Caña," cuya última edición se imprimió en 1955.

A veces se plantea la pregunta: Cual es la diferencia entre la HSPA y la HST?

a. La Asociación de Productores de Azúcar de Hawaii (HSPA) es una organización nó-lucrativa que une a empresas e individuos con el fin de mantener, proteger y hacer progresar a la industria azucarera de Hawaii, sostener su estación experimental, coordinar los embarques, las estadísticas de la industria, dar ayuda en asuntos legales y contribuír al desarrollo de la agricultura en general.

b. Los Tecnólogos Azucareros de Hawaii (HST), constituyen una organización voluntaria de individuos pertenecientes a la clase técnica y a los niveles mas altos

de la administración, que se reunen con el propósito de saber más acerca de todas las fases del azúcar de caña incluyendo el proceso.

Nuestra industria no ha compartido el desarrollo del 50o. Estado de los EE.UU. La posición del azúcar, que en un tiempo fué la principal industria de Hawaii, es actualmente como sigue:

	(Millones de Dólares) En Bruto de Exportaciones			(Millones de Dólares) Ingresos Netos en Hawaii
	1940	1950	1960	1960
Azúcar	49	119	123	80
Piñas	46	97	113	70
Turismo	12	97	131	80
Total de Pagos Federales en Hawaii	N.A.	202	486	390

Expresado en otros términos:

	(Millones de dólares) Sueldos y jornales pagados		
Clasificación	1940	1950	1960
Azúcar	32	56	58
Piñas	12	31	39
Construcción	11	25	99
Comercio	24	74	160
Servicios	13	40	96
Gobierno Federal	44	150	327
Gobiernos del Estado & Locales	17	53	111
Otros conceptos	26	81	185

Las cifras anteriores son estimadas, por cortesía del Dr. Thomas K. Hitch, Vice-Presidente y Director de Investigaciones Económicas, First National Bank of Hawaii.

La posición estática de la industria se ilustra claramente arriba, cuando en 1940 pagó en sueldos y jornales el doble de lo que pagaron los gobiernos del estado y locales; en tanto que en 1960 es justamente todo lo contrario. El gobierno federal mantiene grandes instalaciones militares y navales que inflan sus contribuciones a la economía. Hawaii pagó 232 millones en impuestos federales en 1960.

La industria azucarera está aún recuperándose de los efectos de una huelga de cuatro meses en 1958, la cual originó una reducción seria de nuestra producción en 1958, 1959 y 1960. Un nuevo acuerdo con la unión de trabajadores suscrito a principios de éste año, ha resultado en sueldos y beneficios aún mayores, incluyendo un plan de servicios dentales para los hijos del personal, que viene a sentar un precedente. Es digno de mencionarse el hecho que la industria siempre se encuentra en una situación de sacrificio y relativamente débil por la necesidad de proteger las grandes inversiones hechas sobre una cosecha altamente perecedera y expuesta a perderse. La última legislatura del Estado frustró la regulación de un impuesto local sobre la producción azucarera, altamente fuera de equidad, en apariencia por razones puramente políticas. En el área vital de los embarques la industria pudiera verse forzada a proveer sus propios embarques si los transportadores actuales aumentan las tarifas de fletes—la cuenta anual de la industria por transporte marítimo es casi de seis millones. La creciente e intensa competencia de la remolacha en las áreas principales de nuestro mercado continental, ha forzado a nuestra industria a absorber un incremento substancial en fletes por ferro-carril—en 1960 tales fletes ascendieron a más de tres millones de dólares.

Durante los dos últimos años numerosas empresas de Hawaii han tenido que dirigirse a otras regiones domésticas y extranjeras,

Industria Azucarera Hawaiiana	1940	1950	1960
Número total de empleados	41,000	22,500	14,000
Pagado por hora a los trabajadores ordinarios	$0.27-1/4	$1.03-2/3	$1.64-1/2
Toneladas de azúcar producidas por cada empleado	24	43	67

(Cifras cortesía de la H.S.P.A.)

en un esfuerzo para diversificar de un mercado de tanta competencia. Una importante empresa azucarera de Puerto Rico (Fajardo) ha sido adquirida por C. Brewer Puerto Rico Inc. Tal empresa produce azúcar en una zona mas cercana a mejores mercados que los que tiene Hawaii. Otras importantes firmas azucareras ya han, o se proponen, diversificar sus actividades en otros sectores agenos al azúcar, tanto en Hawaii, como en California, Australia y otras regiones extranjeras. Como la capacidad y la habilidad tecnológica de Hawaii es altamente reconocida, determinadas entidades como Hawaiian Agronomics, (subsidiaria de C. Brewer & Co. Ltd.) y Amfac Associates, (subsidiaria de American Factors, Ltd.); han realizado trabajos consultivos técnicos y administrativos en otras regiones productoras de azúcar del mundo. Entre las mismas se incluyen Irán, Ecuador y Taiwan. Maquinaria azucarera y equipos diseñados y construídos en Hawaii se encuentran en servicio en las Filipinas, Sudán, Perú y otras áreas azucareras.

La fuerza de trabajo de la industria resulta vieja en edad. La mecanización, más las elevadas prácticas para reducir costos, han resultado en limitado número de asalariados durante los últimos años. Los despidos han afectado a los más jóvenes o menos antiguos de los empleados. Hay mucho que hacer sobre mejoras de métodos, segun se retiran los trabajadores más viejos. El cuadro ilustra el curso de las condiciones del trabajo durante los últimos 20 años.

El promedio de utilidades de la industria para 1960 fué menos del uno porciento del valor neto, por segundo año consecutivo. Hubo pérdidas en 1958. En 1960 las operaciones azucareras, costo de producción y entrega al mercado, excedió a los ingresos unos $2,400,000. El último arreglo negociado con la unión representa un costo a dicional de tres millones de dólares para 1961 y 1962; y nuestros principales refinadores, la C & H anticipan un ingreso menor éste año de cuatro y medio millones de dólares a causa de la severa competencia de la remolacha, que ahora dispone de casi ilimitada área de cultivo por razón de los aumentos de cuota.

Debe hacerse destacar que las cifras anteriores, cortesía de la H.S.P.A., se refieren a cosechar la caña cada dos años. En 1940 había mucha caña limpia, cortada a mano. Los rendimientos de 1960 fueron más bajos como consecuencia de los efectos a largo plazo de la huelga de 1958.

En los últimos quince años se han gastado millones de dólares en mejoras y en la mecanización; desarrollando un esfuerzo cuidadosamente planificado para mantenerse en condiciones de competencia mediante incremento de la producción, de la calidad y mediante reducción de los costos. Hawaii ha estado en primera línea en cuánto a cosecha mecanizada y las instalaciones inherentes para lavar la caña, hidro-separadores, caminos, equipos del campo de nuevo diseño e instalaciones para regadío; tambien en la substitución de las antiguas plantas de moler y departamentos de elaboración con maquinaria nueva automatizada.

Los Tecnólogos Azucareros han ayudado a planificar y realizar tan importantes mejoras permitiendo los ingresos máximos obtenibles del capital invertido. Una organización como la HST ha servido eficazmente a la industria azucarera de Hawaii como centro de intercambio sobre información e ideas útiles. Sus miembros se dan cuenta cabalmente de la seria situación de la industria azucarera de Hawaii y trabajan unidos y con entusiasmo, para permitir a la industria obtener una legítima situación remunerativa.

El estimado para la zafra de éste año es de 1,075,000 toneladas. A consecuencia de interrupciones laborales, la última vez que cubrimos nuestra cuota fué en 1956 con una producción de 1,099,543 toneladas.

El programa de 1961 servirá, como en años anteriores, para "estudiar la industria azucarera en todos sus aspectos y estimular y fomentar su prosperidad," lo cual constituye el objetivo fundamental de la HST.

Industria Azucarera Hawaiiana	1940	1950	1960
Total de acres de tierra para azúcar	235,110	220,383	224,617
Toneladas de azúcar de 96o. producidas	976,677	960,961	935,744
Tons. de azucar de 96o. prod. por acre	7.16	8.78	9.03
Costo para elaborar y poner en mercados una tonelada de azúcar:			
Plantaciones de alto costo	$103.05	$146.44	$168.65
Plantaciones de bajo costo	$ 57.61	$ 92.71	$109.00
Precio promedio recibido por tonelada de azúcar de 96o.	$ 52.44	$115.37	$121.56
Utilidad por ciento del valor neto	3.46	6.67	0.86

Reunión Anual de los Tecnólogos Azucareros de Hawaii
Noviembre 13-16, 1961

Extractos del Programa y Trabajos Técnicos

Discurso de bienvenida por *John T. Moir*, 3o., Presidente de la HST.

Los Problemas que Confrontamos, por *Boyd MacNaughton*, Vice-Presidente de la Asociacion de Productores de Azúcar de Hawaii.

Reportes de la Estación Experimental, *Dr. L. D. Baver*, Director

Informe sobre el Centro Este-Oeste.

El *Hon. Daniel K. Inouye*, Miembro del Congreso de los EE.UU., hablará durante el lunch en el Hotel Royal Hawaiian.

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OSA (Pentaclorofenol) en el Agua de Regadío, *Harold Hall*

Un reporte sobre el empleo de las Formulaciones OSA en el control de malas hierbas. Comprende el método de aplicación en el agua de regadío y otras informaciones incluyendo los costos y los efectos sobre la caña y las hierbas.

Control de la Salinidad en el Regadío Aéreo, *Robert Campbell*

Se tratan la salinidad del suelo y del agua de regadío con relación a las exigencias de la permeabilidad.

Relación Agua-Rendimiento en la Caña de Azúcar, *Robert Campbell*

Resultados sobre experimentos recientes que muestran cómo responde la caña de azúcar a cantidades variables de agua.

La Gran Jeringa en Kekaha Sugar Co., *O. R. Moe*

Descripción de regadío aéreo utilizando el equipo de la Gran Jeringa.

Métodos Climáticos para Estimar el Empleo Consuntivo del Agua, *Jen-Hu Chang*

Trata sobre los métodos empleados para estimar el uso consuntivo por la caña de azúcar y su aplicación a planes de gran alcance y a las operaciones de cada día.

Los Tejidos de la Planta como Indicadores de la Tensión de la Humedad, *T. Tanimoto*

El contenido de humedad de 4-5 de los tejidos de los nudos como medida de la tensión hídrica de las plantas de caña.

Pensiones e Inflazón—El Problema y Algunas Soluciones, *Dr. N. Wermel,* Universidad de Hawaii.

El Decano de la Escuela de Negocios de la Universidad de Hawaii, un especialista en cálculos sobre seguros; explicará las bases de los cálculos sobre retiro, beneficios de los seguros y costos. El término "calculado actuarialmente" será despojado del misterio que rodea tal definición. Algunos de los aspectos tratados serán la exactitud de los pronósticos hechos por los actuarios y si son demasiado prudentes.

Las Publicaciones de los Centrales: Una Pérdida de Tiempo?, *Jack Fox*

Un especialista en relaciones públicas con amplia experiencia escribiendo noticias, contesta afirmativamente ésta provocativa pregunta. La disertación estimulará al personal de relaciones industriales del central azucarero y a los editores, al avalúo de la calidad de su periódico. Los órganos locales sirven una finalidad si los objetivos satisfacen una necesidad particular de la empresa. Los editores que no tienen cabal concepto de las necesidad es de la Compañía y redactan su periódico del lunes superficialmente, para llenar las apariencias, están en realidad malgastando su tiempo y el dinero de la firma.

El Acta de Transporte a Motor de Hawaii, *Wilbur K. Watkins,* Abogado Comisionado Especial.

Trata sobre el Acta de Transporte a Motor, en vigor desde Agosto 21, 1961; y sus relaciones con respecto a las operaciones azucareras.

Investigaciones sobre las Características Refinantes del Azúcar, *Dr. P. F. Meads*

Se ha investigado el efecto de varios constituyentes sobre la eliminación del color por carbón animal. Se ha encontrado que ambas substancias: solubles e insolubles interfieren en la eliminación del color. Se ha perfeccionado un método para medir la filtrabilidad por medio de un filtro a presión. Luce superior al método Elliott.

Investigaciones Sobre la Calidad del Azúcar, *John H. Payne*

La técnica de filtración-gel (material gelatinoso formado por coagulación) ha sido empleado para aislar constituyentes de tamaño molecular en el cristal del azúcar. Estas substancias fueron luego caracterizadas por espectrofotometría en ultra-violeta. La relación entre el color y la humedad interna del cristal de azúcar ha sido establecida cuantitativamente. Los valores encontrados difieren de aquellos en el licor madre. Los materiales que contribuyen a la medida del color de los cristales pueden extraerse de una solución de los cristales por ultra-centrifugación (fuerza promedio 105,000 x G). Esto demuestra que las substancias insolubles no eliminadas por la filtración afectan la medida del color.

Operación Terminal, *D. G. Conklin,* Kahuku Plantation Co.

Se describen las operaciones de muestras y análisis del azúcar crudo en la terminal de manipulación de azucar a granel.

Evolución de las Centrífugas, *George Bromley,* Oahu Sugar Co.

En Oahu se ha ensayado una centrífuga contínua B.M.A. La máquina es del tipo de un cono vertical, en la cual la masa cocida entra por el fondo del cono. La miel pasa a través de la tela del cono y el azúcar descarga por la parte superior del cono. Los ensayos se han realizado principalmente con masas cocidas de bajo grado. La capacidad y eficiencia del trabajo realizado por la máquina son prometedores.

Planificación de Repuestos para Equipos, *Jay Pilon*

Hay varios factores a discutir en un programa de selección de equipos y sus repuestos buenos y completos. Deben considerarse los factores de producción, depreciación, reparación, desuso o condición anticuada, disponibilidad, re-venta, impuestos, intereses, seguros, costos de operación y fluctuaciones del cambio a dólares. Un programa cabal, basado en la experiencia de cada uno y en sus datos registrados, puede permitir tremendas economías en el sector de los equipos de alto costo.

Aspectos Destacados de las Negociaciones de 1961, *John Murphy*

El Presidente del Comité de Negociaciones de la Industria Azucarera ofrecerá una información sobre las negociaciones del ultimo contrato, con especial énfasis sobre la posición de la industria en el arbitraje de jornales. El orador tratará las implicaciones derivadas del acuerdo.

Inferencias de la Actividad Legislativa de la HSPA, *Vern Spackman*

El Vice-Presidente del Comité Legislativo de la HSPA en 1961 hablará sobre los objetivos del mismo, los éxitos y fracasos del Comité en la legislatura de 1961; y como el personal de supervisión de las plantaciones azucareras puede ayudar en la preparación y aprobación de una buena legislación, capaz de ayudar a su Compañía y a su comunidad.

Cadenas Impulsoras y Conductores, *B. L. Pearce,* Link Belt Co.

Las cadenas para transmisión de fuerza y para conductores tienen partes que satisfacen tres funciones: Barras laterales para transmitir tensión, pasadores y partes de engranaje y ajuste para permitir adecuada articulación y una superficie deslizante y rodante para contacto con la rueda dentada. Los distintos problemas sobre cadenas de la industria azucarera exigen diferentes diseños, los cuales se seleccionan en razón de resistencia (final o fatiga) y con respecto al desgaste. Las soluciones más económicas a éstos problemas se logran mediante información obtenida del laboratorio físico y metalúrgico, y por pruebas en la práctica.

Evolución del Proceso de Difusión de la Caña, *H. F. Silver,* Silver Engineering Works, Inc.

Se describe la maquinaria recientemente diseñada para la preparación de la caña para la difusión y dicho proceso. Hay equipos disponibles para capacidades hasta 300 toneladas de caña por hora.

Prácticas Modernas de Molienda, *Dr. W. R. Crawford*

Director Comisionado de Investigaciones, Instituto de Investigaciones Azucareras. Expone los fundamentos teóricos y prácticas de molienda en Australia.

Evolución del Cosechador Mecánico, *W. Burton, L. Anderson, J. Rockstead, J. Carras y W. O. Gibson*

Una revista de las características de los equipos de cortar y cargar caña bajo ensayos en HC&S y Laupahoehoe Sugar Company. Se reportarán los progresos en el funcionamiento de éstas máquinas, con relación particularmente a la calidad de la caña entrega da al central azucarero.

Programa de Contratación, *F. Vaughn, A. Millikin y R. Moyle*

Un informe sobre las actividades del subcomité de Contratación relacionado con el programa propuesto y a ser negociado con la Unión. El panel cubre las calificaciones mínimas, el coeficiente de progresión, etc.

Clasificación de Empleos.

Actividades Legislativas en 1961, C. Cameron y panel.

Los legisladores conectados con la industria azucarera presentarán sus puntos de vista sobre las actividades del pasado en la legislatura del Estado. Tambien concurrirá el Analista Legislativo de la HSPA, el cual reportará sobre las funciones de su oficina y las realizaciones del primer año.

Adsorción de Herbicidas por los Suelos Hawaiianos, *Q. H. Yuen y H. W. Hilton*

Los factores del suelo y su influencia sobre la efectividad de los herbicidas parecen ser de importancia en virtud de la tendencia hácia aplicaciones preemergentes de productos químicos orgánicos en la práctica de nuestro control de las hierbas. Investigaciones preliminares sobre las causas de los resultados contradictorios obtenidos de la dosificación uniforme de CMU—3-(p-clorofenil)-1, 1-dimetilurea—muestran que la "fijación" por el suelo juega un papel significativo en las variabilidades del control de las hierbas y los efectos sobre la caña. Este trabajo comprende investigaciones sobre problemas de la "fijación" por el suelo con información especialmente sobre CMU, y DCMU—3-(3,4-diclorofenil)-1, 1-dimetilurea.

Condiciones Básicas de los Herbicidas, *Kenneth A. Sund y Norman Nomura*

Se han perfeccionado métodos de investigación de laboratorio para el avalúo de los herbicidas aplicados en tres formas principales: por contacto, herbicidas sistemáticos o por control de preemergencia. El método empleado para probar productos químicos preemergentes demostró toxicidad letal a diluciones extremadamente bajas, v.g., 0.1 p.p.m. Doce de los mas importantes productos usados en Hawaii mostraron diferencias notorias entre sí, dependiendo del estado morfológico de las plantas expuestas a la aplicación del herbicida.

Control de la Hierba Manienie en Kilauea, *R. Weimer y K. Harada*

Un reporte sobre el progreso en los experimentos conducidos por la Kilauea Sugar Company para el control de cepas persistentes de manienie.

Control de la Passiflora en Kohala, *K. Kunimitsu*

Informe sobre ensayos de control de la Passiflora en Kohala con datos sobre productos, valuación y grado de control.

Incorporación de Herbicidas a los Suelos y Equipos para Aplicarlos, *Noel Hanson*

Los estudios realizados aquí y en el continente han demostrado que mezclas de 2,4-D, ureas sustituídas, triazinas y Eptam en la capa superior de una pulgada del suelo dá mas largo control de preemergencia de las hierbas, que cuando los herbicidas se atomizan sobre la superficie solamente. Los estudios aquí favorecen roto-labores inmediatamente despues de la atomización. Tambien se tratará en este trabajo sobre los equipos a mochila a presión, hechos de fibra de vidrio, de la HSPA; así como quemar las hierbas y la atomización ambulante en Kohala.

Los Efectos de los Herbicidas sobre la Caña de Azúcar, *R. Elliott y N. Hanson*

Películas mostrando los efectos de contacto, sistemático y herbicidas de preemergencia sobre diferentes variedades de caña de azúcar.

Lubricación Moderna—Lo que éllo Significa en Hawaii, *R. W. Goodale,* de la Standard Oil Company.

Operaciones de Molienda, *R. H. Hughes,* Moderador.

Estudios Sobre Eficiencia de la Molienda en la H. C. & S. Co., *W. S. Haines*

A causa de la relación directa entre la extracción y la cantidad de agua de imbibición observada en las pruebas de 1959, el trabajo en 1960 estuvo orientado hácia cambios en las variables de operación que pudieran superar la limitación principal sobre la proporción de imbibición asi como sobre extracciones de jugo substancialmente más altas. Aumentos similares en la extracción de pol no tuvieron lugar debido a la mezcla muy pobre del agua de imbibición con el jugo residual. El porcentaje del jugo libre de las células fué estimado por un procedimiento empírico. Las pruebas de 1961 incluyeron intentos para incrementar la eficiencia de mezcla por ambos medios: químicos (detergentes) y mecánicos. El empleo de un detergente fué completamente sin eficacia. Los resultados con un rodillo o maza planchadora no se han completado en ésta fecha (Septiembre); pero se espera que los resultados resultarán disponibles para presentarlos a la convención de Noviembre.

Settings de Molinos, *Jordan G. Simonoff*

Aplicación de los procedimientos para settings de molinos en la H. C. & S. Co.

Empleo de una Prensa de Tornillo para Extraer el Jugo del Bagacillo, *John H. Payne, W. S. Haines y Ken Nishioka*

En la H. C. & S. Co. se realizó una investigación para tratar el bagacillo por medio de una prensa de tornillo de 10 y ¼ pulgadas de diámetro construída por la French Oil Mill Machinery Co. Los resultados promedio de varias series de ensayos utilizando distintos arreglos de la prensa fueron: Capacidad 2.3 toneladas de fibra por hora, extraccion de pol 91%, pol del bagazo 3.3%, humedad del bagazo 43%. El consumo de fuerza promedió 82 H.P. por tonelada de fibra por hora.

Tamices DSM para el Jugo, *J. W. Herkes*

Desde que instalamos la desfibradora hemos tenido gran cantidad de bagazo fino en el jugo crudo. Durante 1960 no pudimos operar adecuadamente el clarificador y el filtro. Este año dos Tamices DSM separaron el 65% de la fibra en el jugo crudo, resultando en una reducción alrededor del 50% en las cachazas del clarificador. Tambien nos permitió añadir más cantidad de bagacillo fresco al filtro rotativo al vacío, mejorando su trabajo. Con éstos Tamices DSM no hemos tenido dificultades en el clarificador y el filtro, en éste año lluvioso.

Centro de Entrenamiento Brewer, *R. W. Mist*

El director de éste centro describirá el programa de entrenamiento de supervisión de la firma Brewer, en Hilo. Supervisores de todos los niveles son enviados desde las plantaciones de Brewer para un curso de una semana el cual cubre todas las fases de la supervisión, incluyendo emitir órdenes, comunicaciones, manejo de las quejas e injusticias, entrenamiento de los subordinados, &. Se ofrecerá una apreciación objetiva del programa.

Complicaciones de la Vejez en las Fuerzas del Trabajo, *I. Gutmanis*

No obstante que el envejecimiento de las fuerzas de trabajo azucareras resulta evidente para todos en la industria, pocos se percatan de las consecuencias que pueden tener en los próximos diez años. Un economista usará las estadísticas que sustentan ésta situación y tratará sobre lo que significan para el futuro de la industria azucarera con respecto a su afianzamiento y crecientes necesidades.

Compensaciones a los Trabajadores y su Crítica, *Dr. Earl Cheit, Universidad* de California.

Una autoridad de prominencia nacional en éste campo presentará sus puntos de vista sobre las tendencias actuales en las compensaciones a los trabajadores.

Nuevos Herbicidas, *Don Burgoyne y Vernon M. Olney*

Información sobre Du Pont #326 y reportes recientes sobre las triazinas.

Resúmen sobre Prácticas en el Control de Hierbas, *K. Willey, F. Trotter, E. Warner y W. Baptiste*

Se ofrece una recopilación de las características distintivas de las operaciones prácticas herbicidas en varias plantaciones de Hawaii: Kauai, Oahu, Maui y Hawaii.

Reporte sobre Adelantos en el Corte Mecánico de la Semilla de Caña, *Jay Rockstead*

Un reporte complementado por películas sobre los aspectos de funcionamiento, calidad y costos de los equipos mecánicos para corte de semilla en la H. C. & S. Co.

Distancia de Siembra, *Leroy M. Kosaka*

Estudio sobre la distancia de siembra en la H. C. & S. Co., con datos sobre crecimiento y densidad de tallos.

Resúmen sobre Prácticas de Siembra, *K. Willey, F. Trotter, E. Warner y R. T. Vorfeld*

Sumario de las características distintivas de las prácticas de siembra en varias plantaciones de Hawaii: Kauai, Oahu, Maui y Hawaii.

Equipos Empleados en el Campo en Regiones Extrajeras Productoras de Caña de Azúcar, *Art Stubenberg*

Por medio de vistas fijas fotográficas y explicación verbal el autor describirá sus observaciones a través de zonas azucareras extranjeras, especialmente Sur

América; por las cuales ha viajado extensamente.

Convertidor de Torsión y Momento Pleno Torsional en el Eje de Transmisión, *W. E. Edwards,* Allison Div., General Motors.

Luce que el paso de progreso número uno logrado en los últimos diez años en ésta materia es el convertidor de torsión hidráulico y el momento pleno torsional en el eje de transmisión. Desde 1952 el número conocido de fabricantes de los primeros ha aumentado un 186%; el de los segundos un 500% y el número de fabricantes domésticos de equipos pesados incluyendo los citados componentes ha aumentado un 600%.

El Computador Eléctrico como Herramienta para Investigaciones, *George Darroch*

Día tras día el progreso de las investigaciones depende de la acumulación y asimilación de grandes volúmenes de datos. Buenos ejemplos son los estudios sobre velocidad de la infiltración, estudios sobre regadío aéreo, genética y otros experimentos en el campo. En cada caso los datos primarios no tienen ningun significado propio, ni están listos para ningun tipo de tratamiento estadístico; hay que hacer primero cierto número de cálculos de rutina y despues aplicar los tratamientos estadísticos apropiados. La planificación cuidadosa y la preparación de programas adecuados puede proporcionar una vía desde la información primaria al reporte terminado, listo para ser reproducido y distribuído, con muy poca intervención del operador. Programas sobre programación lineal, estudios en gran escala de retrogradación y sus técnicas resultan disponibles y pueden ser aplicadas prontamente segun se desarrolla la información básica. Estudios simulados sobre la producción de caña pueden llevar al entendimiento adicional de problemas de producción segun el personal de investigaciones puede precisar con minuciosidad los hechos fundamentales y proponer convenientes modelos matemáticos. Se tratarán algunas de las citadas aplicaciones conjuntamente con problemas de recopilación de datos, programación, errores y similares.

Reduciendo los Costos de Operación de las Grúas Cargadoras, *S. Reed y J. Spedden*

Hornos Equipados con Alimentadores Mecánicos Esparcidores, *Stanley Mott-Smith*

Trata sobre los métodos actuales para quemar bagazo, los tipos de hornos usados y sus principales características para una combustión eficiente combinada con bajos costos de mantenimiento. Se revisan los equipos modernos para recuperar un porcentaje más alto del total del calor generado. Se detallan los generadores de vapor instalados recientemente en Hawaii. Se hacen comentarios sobre las características divergentes de diseño y se comparan datos estadísticos sobre la rutina del trabajo de operación. Se invitará a los operadores de éstas calderas de vapor a exponer sus opiniones.

Funcionamiento de un Nuevo Tacho en McBryde Sugar Co., *Wah Fai Dang*

Despues de la zafra de 1960 se instaló un nuevo tacho con circulador mecánico por el fondo y un eliminador de arrastres "Metex-mesh-mist," destinándolo a la elaboración de templas comerciales de semilla. El nuevo tacho ha satisfecho nuestras aspiraciones sobre (1) mucho mayor capacidad evaporatoria por mayor área de superficie calórica y la acción del circulador mecánico; (2) incremento de la velocidad de cristalización permitiendonos grano mayor a despecho de la baja pureza de los jugos; (3) color mejorado de los azúcares por la acción combinada de mejores temperaturas en el tacho y cristalización por suspensión. Así como por el uso del Dow-Separan AP-30 en la clarificación; (4) no hemos encontrado arrastres de importancia. Uno de los problemas confrontados fué tener que desarmar el equipo eliminador de arrastres despues de seis meses de trabajo.

Bombas de Vacío de Desplazamiento Centrífugo en Dos Etapas, *F. A. Stokes*

Se instalaron bombas de vacío de desplazamiento centrífugo en dos etapas, individuales, para todos los tachos y el evaporador a quíntuple-efecto. Las unidades están conectadas a condensadores barométricos, son de fácil operación, bajo costo de mantenimiento, capacidad para manejar cualquier arrastre de líquido entrando con los gases, requieren bajo sello de agua y producen un vacío fácilmente controlado, sin pulsaciones. Mediante adecuado tamaño y capacidad de las bombas, y correas en V de transmisión, hay flexibilidad para futuras expansiones cambiando las relaciones de las poleas acanaladas y las unidades motrices.

Mejoras Menores en la Fábrica, *E. F. Ferguson, R. W. Giananini, Takuzo Ineouye y Myron H. Caplin*

Una serie de mejoras prácticas de menor categoría realizadas durante el último año en todas las islas. Se presentan no menos de 25 tópicos diferentes incluyendo desde "Pintura para Centrífugas" al "Uso del Teflon" y "Arcos de Cemento Bituminoso para Hornos."

Temas sobre Personal Empleado, *Dr. John Ferguson*

Los Jornales como Estímulo: Aún Valen la Pena?, *D. Avery y panel*

Un panel incluyendo a un ingeniero industrial, un director de relaciones industriales y un hombre de operaciones discutirá éste problema crucial y decisivo de los jornales como factor incentivo. El panel tratará sobre los antecedentes históricos de los incentivos en la industria azucarera, las disputas que han ocurrido y las perspectivas sobre tales estímulos. Se efectuará una franca discusión sobre las causas de los problemas surgidos a consecuencia de los incentivos.

Revistiendo Tuberías con Concreto —Revistiendo Zanjas Contínuas.

Exhibición de películas mostrando el equipo utilizado en revestir con concreto viejas tuberías metálicas y sobre el equipo para revestir zanjas abiertas.

Requisitos para el Exito de un Programa de Mantenimiento, *F. Bolte*

Una exposición oral, con proyección de vistas fijas en colores, sobre las unidades básicas automotrices y equipos del campo para el programa de mantenimiento, perfeccionados para las plantaciones azucareras de la American Factors, Ltd. Presenta accesos y retadores puntos de vista sobre problemas de mantenimiento. Tambien una estimulante partida de "20 Cuestiones" le dará a usted una oportunidad para evaluar su presente programa. Mediante una anotación numérica usted podrá juzgar su programa tal y como realmente es, permitiéndole definir ambos: sus puntos fuertes y sus áreas deficientes.

Mejorando la Economía de la Máquina Mediante Plena Filtración del Flujo de Lubricante, *W. G. Nostrand*

Es muy importante la economía en el funcionamiento de los equipos mecanizados. Los dispositivos para filtrar el aceite lubricante han alcanzado una posición extremadamente importante. Esta crítica necesidad ha sido alcanzada y satisfecha mediante la plena filtración del flujo de lubricante, que difiere de otras técnicas, en que filtra contínuamente toda la corriente de aceite que ha pasado por las partes del equipo. Este equipo de filtración funciona el cien por ciento del tiempo, manipulando todo el flujo de aceite bajo aceptable eficiencia.

Depuradores de Aire Seco, *John Breathed*

Necesidades de Fosfatos y Piedra Coral de la Caña de Azúcar en los Suelos de la Costa en Hilo y Hamakua, *Dr. H. F. Clements*

Durante los últimos años el departamento de investigaciones de la firma Brewer, en cooperación con la Estación Experimental Agrícola de la Universidad de Hawaii, han estado enfrascados en un intenso programa destinado a saber las necesidades de calcio y de fósforo de la caña de azúcar en los suelos muy ácidos de las costas de Hilo y Hamakua. En el curso de éste estudio ha resultado claro que hay varios factores implicados resultantes del uso de la piedra de coral. Aunque han sido satisfechas todas las necesidades nutrientes en calcio y fósforo de la cosecha de caña, hay una respuesta adicional en el crecimiento de la caña a las aplicaciones

(*Signe en la página* 78)

Vista parcial de la Estación Experimental de la HSPA, sostenida exclusivamente por fondos privados procedentes de las empresas azucareras. Está reconocida por los azucareros de todo el mundo como la más completa y eficiente en su género.

Historia de los Tecnólogos Azucareros de Hawaii

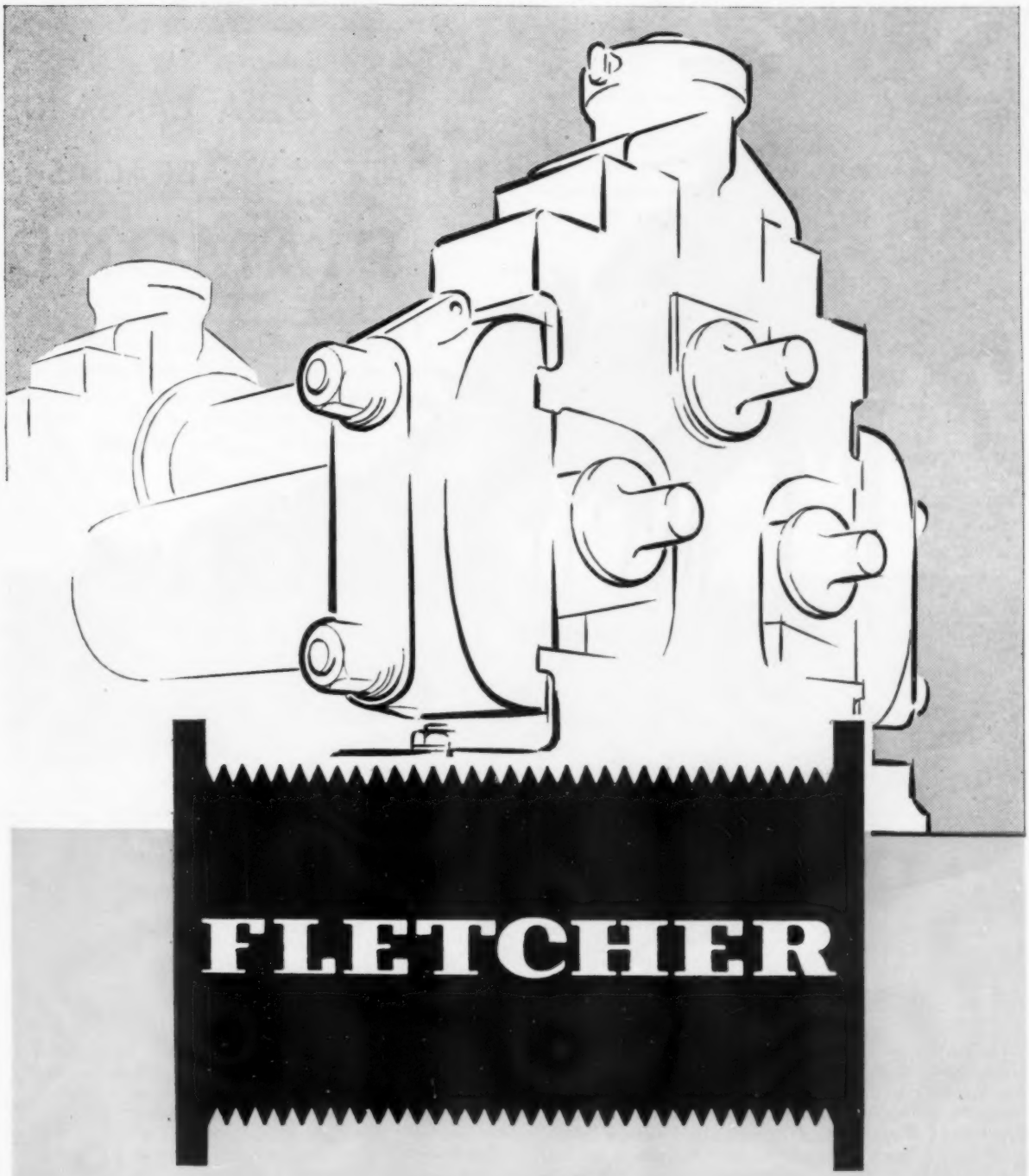
Fred D. Kennedy
Secretario-Tesorero

La actual sociedad HST tuvo dos organizaciones matrices y ambas comenzaron hace unos 59 años. La Asociación de Químicos Azucareros de Hawaii fué fundada en una reunión celebrada en Noviembre de 1902 en Honolulu por un grupo de 23 hombres, la mayoría de los cuales eran químicos azucareros en los centrales. Los fines de ésta sociedad eran "el estudio de la química azucarera y de los métodos analíticos usados a los efectos del control químico del proceso de elaboración, con el propósito de alcanzar adecuada uniformidad en ambos, los métodos y los datos sobre los resultados." La primer reunión anual fué celebrada en Octubre de 1903. El crecimiento de ésta organización fué lento por varios años, porque los miembros en activo en las fábricas eran bastante limitados: en realidad el número de socios nunca fué mucho más de 40. Otro posible, y bastante interesante motivo, fué la oposición que se hizo a la asociación, basada en la sospecha por algunos, de que se trataba de una unión de químicos integrada con el propósito ulterior de controlar la retribución y precisar las horas de trabajo.

El campo de la organización fué ampliado en 1907 para incluír los químicos en otras industrias, y al efecto se eliminó la palabra "azúcar" de su nombre. Parcialmente en los dos años subsiguientes se celebraron reuniones trimestrales y despues se volvieron a efectuar las reuniones anuales hasta 1922. El número de miembros incrementó hasta unos 125 en Marzo de 1922.

El otro grupo matriz, la Asociación de

(*Signe en la página* 75)



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En realidad los hierbicidas Diamond son una especie de "socio silencioso" que coopera con el agricultor y lo ayuda á incrementar sus utilidades rebajando los costos y situándolo en mejor posición para competir en los mercados del mundo. Los principales productores de caña usan productos químicos agrícolas Diamond Alkali saben muy bien que el rótulo Diamond está respaldado por uno de los más altamente conocidos fabricantes en éste giro—que los hierbicidas Diamond son eficientes, seguros y económicos.

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2. Coronas provistas por completo de dientes envolventes . . . para larga vida, funcionamiento suave. Siempre tienen más de un diente ajustado.
3. Tapas de presión con arietes hidráulicos largos y chumaceras elevadas permiten á las mazas superiores flotar libremente.
4. Conductores intermedios tipo unitario . . . que se pueden extraer fácilmente . . . equipados con embragues de aire por control remoto.
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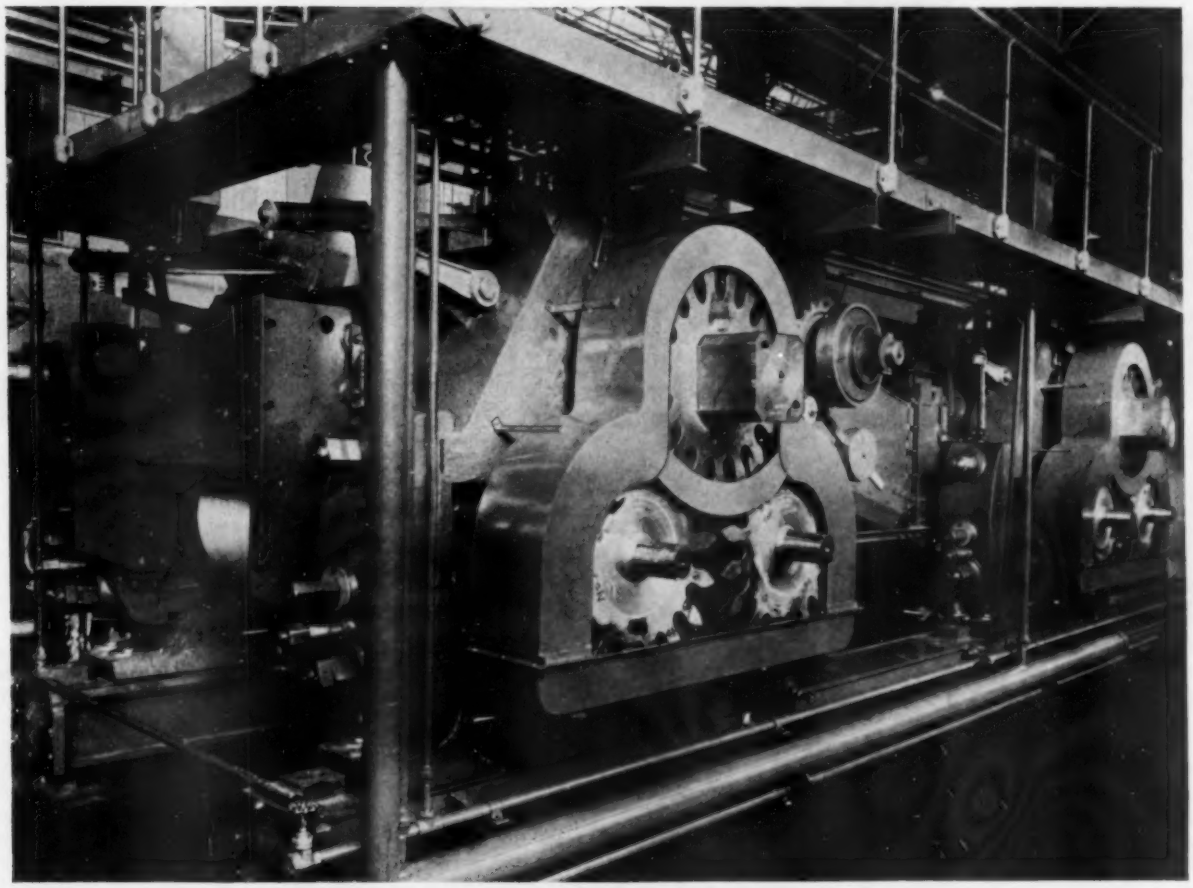
7. Turbinas de vapor como unidades motrices proporcionan flexibilidad completa bajo todas las condiciones de fuerza y velocidad.



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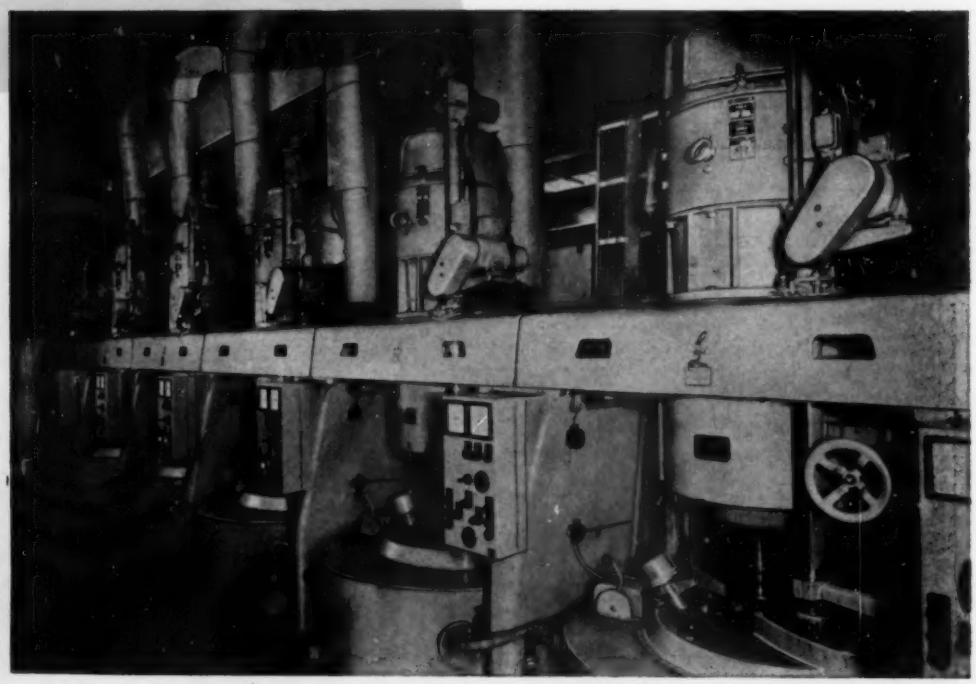

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ASEA

Historia

(*Viene de la páginas* 70)

Ingeniería de Honolulu, fué constituída en Febrero de 1902 por seis hombres, ninguno de los cuales estaba directamente conectado con la industria azucarera. Celebraban reuniones anuales y en 1906 la organización fué ampliada, cambiandose su nombre por Asociación de Ingeniería de Hawaii. Sin embargo, tenía muy poca relación con la industria azucarera, hasta la primavera de 1913, cuando se designó un comité para trazar los planes y celebrar una convención de ingenieros de los centrales azucareros. La primer reunión anual se efectuó en Octubre de 1913, con la asistencia de 29 ingenieros procedentes de los ingenios. En los años próximos ésta asociación y la Asociación de Químicos de Hawaii empezaron a atraerse y complementarse. En 1913 y 1915 ambos grupos se reunieron con solo una semana de separación en las fechas; y en 1914 y 1916 se celebraron las sesiones en días contiguos. En la convención de 1917 las dos sociedades celebraron reuniones conjuntas por dos días y reuniones separadas durante tres días. La Asociación de Ingeniería tuvo un período de inactividad y no se celebraron reuniones de éste grupo en 1918 y 1919. En 1920 se efectuó otra sesión conjunta con los químicos; pero incluyendo un limitado programa por parte de los ingenieros, los cuales no se reunieron en 1921.

Poco despues de la convención de 1921, por la Asociación de Químicos de Hawaii se inició un movimiento para fusionarse con la Asociación de Ingeniería de Hawaii, ya que sus finalidades eran similares y numerosos miembros pertenecían a ambras organizaciones. Se sugirió la formación de una nueva sección para incluír a los agrónomos. Un referendum entre los miembros de ambas mostró al 90% en favor de la consolidación. Y en Marzo de 1922 se reunió un comité para trazar los planes de una nueva organización, que se conocería como la Asociación de Tecnólogos Azucareros de Hawaii. La primer sesión anual tuvo lugar de Noviembre 15 al 18 de 1922. En Octubre de 1923 el total de socios ascendía a 328, con los miembros divididos por secciones en la forma siguiente: Agricultura 75, Química 118, Ingeniería 105, no-clasificados 30 y 32 no-residentes. La lista de asociados creció continuamente hasta alcanzar 820 en 1938; con 520 miembros activos locales, 80 miembros asociados locales y 220 miembros no-residentes.

Se comenzó en 1922 a imprimir en una memoria el texto de los trabajos técnicos presentados. Numerosos cambios se efectuaron en una reunion celebrada en 1931. Se constituyó una comisión de programas para coordinar las actividades de las secciones de Química e Ingeniería; lo que posteriormente condujo a la consolidación de las dos secciones. Se organizaron secciones locales en cada isla para celebrar reuniones en el curso del año. Se sugirió crear secciones para el personal de la industria de la piña y para los contadores de los centrales; pero éstas proposiciones fueron descartadas despues.

Durante los años de 1929 a 1937 e numero de miembros activos se mantuvo casi al mismo nivel; pero hubo gran aumento de miembros asociados y mayor número aún de miembros no-residentes. Por el año 1937 la lista de socios era un 64% de miembros activos, un 9% de asociados locales y un 27% de no-residentes. Algunos consideraron que el número relativamente elevado de socios no-residentes traspasaba los límites e inmiscuía sobre la Asociación Internacional de Tecnólogos Azucareros (ISSCT) que había sido fundada en 1924. En 1937 el Presidente designó un comité para estudiar una posible reorganización. Este comité redactó un proyecto de nuevos estatutos, introduciendo cambios tales como

(*Signe en la página* 78)

En 1778 el Capitán James Cook fué el primer hombre Occidental en arribar a Hawaii, encontrando que la caña de azúcar crecía en los alrededores de las chozas de los Polinesios. Solamente masticaban la caña, no la utilizaban para elaborar azúcar.

Los antecedentes registrados indican que cierta persona innominada procedente de China fué el primero en intentar elaborar azúcar en las Islas en 1802. Trajo un molino de piedras desde China y molió caña en Lanai, una isla dedicada en la actualidad exclusivamente al cultivo de la piña.

¿Porqué aumenta tan rápidamente la demanda por molinos de caña Farrel?

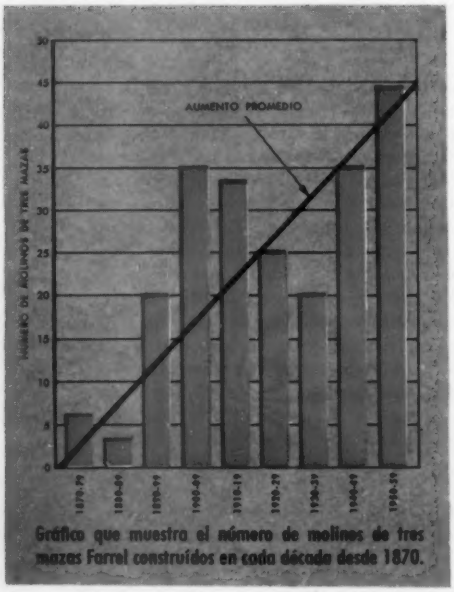

Gráfico que muestra el número de molinos de tres mazas Farrel construídos en cada década desde 1870.

El motivo es porque Farrel ha sido el primer promotor de cierto numero de mejoras de primera importancia en los equipos de moler caña.

Por ejemplo, las mejoras en los mecanismos de los arietes hidráulicos para lograr mantener una presión uniforme sobre las mazas, y la introduccion de los rodillos de alimentación forzada han resultado en aumentos substanciales en la extracción de sacarosa. La lubricación automática de los collarines de los guijos o ejes de las mazas y el control centralizado de la impulsión de los molinos reducen los costos del personal de operación.

Nuevos diseños para las tapas laterales y las tapas superiores de presión permiten remover vertical y rápidamente todas las mazas para nuevos rayados de los tambores u otras operaciones de mantenimiento. Tambien se ha reducido el tiempo requerido para remover los pistones hidráulicos y los conductores intermedios.

Vírgenes o pedestales mas fuertes y dispositivos contra la corrosión aumentan los años de vida de la planta de moler. Nuevas coronas endurecidas, engranes fresados y conductores intermedios de bandas de goma están alcanzando cifras-record de duración.

Estamos mencionando solamente algunas de las innovaciones recientes que han impulsado la mayor demanda por molinos Farrel. Pero para una informacion completa solicite una copia del Boletin 312.

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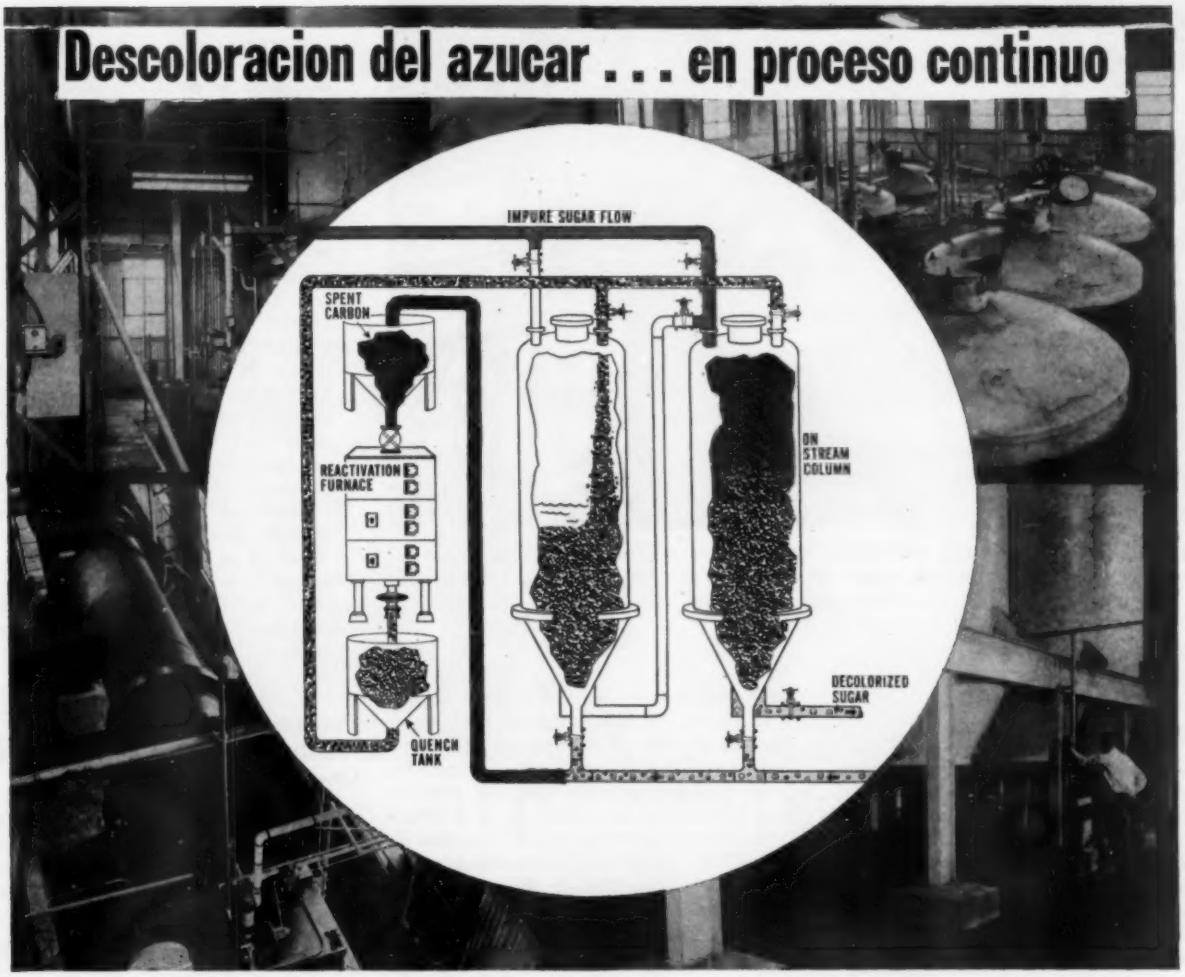

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El Carbón Granular Pittsburgh Tipo CAL, en un sistema de columna, con reactivación, constituye una operación contínua que permite una máxima eficiencia de descoloración, segun puede observarse en las fotografías arriba de la planta de refinar de la empresa Southdown, Inc.

Han sido eliminados los tanques de suspensión del tipo de carga intermitente, los agitadores y los equipos intermediarios de manipulación. Las cantidades de auxiliares filtrantes y carbón pulverizado son reducidas grandemente; requiriéndose menos filtros prensas.

El Carbón Granular Pittsburgh Tipo CAL en una serie de columnas proporciona mayores rendimientos de productos, utiliza menos carbón y, en consecuencia, *reduce significativamente los costos de descoloración.*

Para máxima descoloración del azúcar, investigue usted el Carbón Activado Granular Pittsburgh. Ponga éstas ventajas a trabajar en su refinería para ayudarle a elaborar un producto aún mejor . . . a menor costo. 3722

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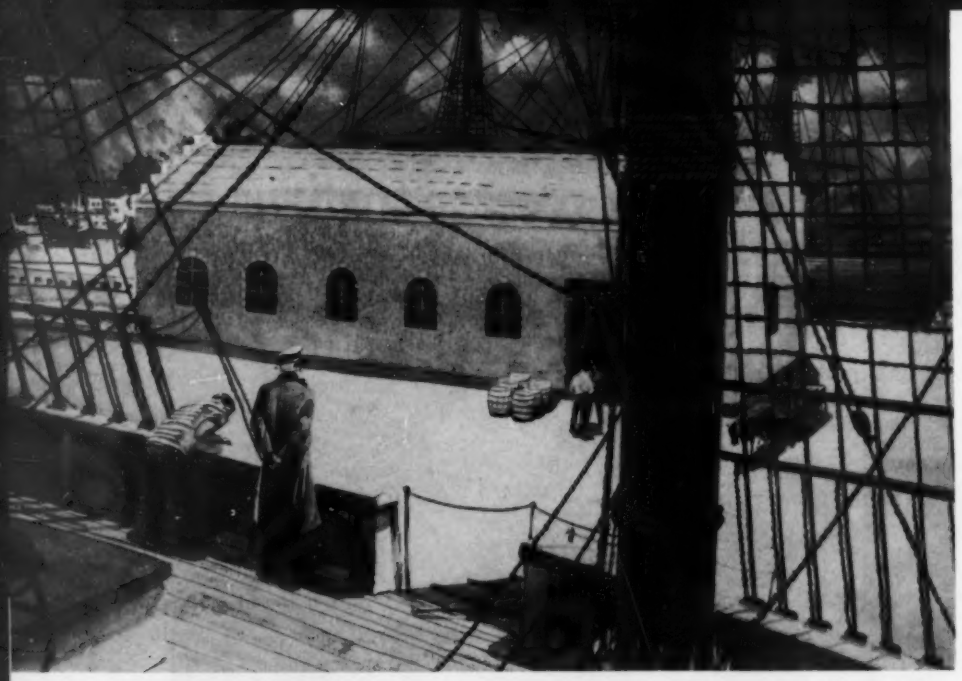


En el año 1837 Ladd & Co. embarcaron su primer cosecha: 2.1 toneladas de azúcar. Este fué el inicio de un flujo de azúcar al continente que hoy asciende a un millón de toneladas al año.

Historia

(*Viene de la página* 75)

limitar los socios a residentes locales, unificar las secciones de química e ingeniería, limitar la elección de directivos a los socios activos solamente, ampliar el Consejo de Directores y centralizar en Oahu el control de la asociación. Dichos estatutos fueron sometidos a los socios y aprobados por gran mayoría. Se celebró en Mayo de 1938 una asamblea constituyente surgiendo así la presente organizacion de Tecnólogos Azucareros de Hawaii.

Durante el curso de 23 años se introdujeron cambios adicionales, revisándose los estatutos en 1948, 1954 y 1959. En 1948 se creó la sección de Relaciones Industriales. Despues de la sesión anual de 1952 se consideró reorganizarse en siete secciones: Agricultura, Automotriz, Química e Ingeniería, Cultivos y Control de Malas Hierbas, Cosecha, Ingeniería Industrial y Relaciones Industriales; para representar de manera más adecuada las distintas fases de interés para los asociados. En 1953 la Junta de Directores confeccionó el programa bajo la base de las citadas secciones a vía de prueba. En 1959 se resolvió reducir el número de las secciones, enmendándose los estatutos para proveer solamente dos: Campo y Fábrica. Sin embargo, se mantuvo en el número de siete, más el presidente, los miembros del Comité de Programas; para conservar la flexibilidad necesaria para representar todos los intereses de los asociados. Estos cambios en la organización han respondido a los deseos y necesidades de los miembros.

Se celebraron reuniones anuales en la Estación Experimental los años 1938, 1939 y 1940; y en el Hotel Moana en 1941. No hubo sesiones desde 1942 a 1944 debido a la guerra. En Diciembre de 1945 se reunió la Sección de Agricultura solamente, entre tanto que la Sección de Química-Ingeniería no lo hizo hasta Febrero de 1946. La reunión de 1947 se efectuó en el Instituto de Ingeniería Agrícola de la Universidad de Hawaii. Al completarse un auditorio en la Estación Experimental, se efectuaron en el mismo las convenciones de 1948 a 1951. Debido a que la sesión general del primer día, integrada por todas las secciones, era muy numerosa para la capacidad del auditorio, hubo que celebrarlas en el Teatro Palace situado cerca de la Estación Experimental; en 1956 en el Dillingham Hall y en 1957 en el Hawaiian Village Hotel. A consecuencia de la prolongada huelga de 1958 no hubo reunion en dicho año. Durante los últimos años se hizo cada vez más difícil acomodar el desenvolvimiento de las reuniones de las siete secciones en la Estación Experimental; utilizandose desde 1959 el Hotel Princess Kaiulani, de construcción reciente y con las mayores facilidades. Las convenciones se han desenvuelto con éxito y eficiencia; y por consiguiente el citado hotel ha continuado siendo la sede de las conferencias de la H.S.T.

No hay duda que los Tecnólogos Azucareros de Hawaii han jugado un importante papel en el desarrollo técnico de la industria azucarera Hawaiiana. Del reducido número de 29 hombres que integraron la organización matriz, se ha convertido en una entidad de 1,360 miembros, todos residentes de Hawaii; y quienes o bien están empleados directamente por la industria azucarera o están interesados en sus finalidades: "el estudio de la industria azucarera, en todas sus fases; y el fomento de su prosperidad."

Reunion Anual

(*Viene de las páginas* 69)

de piedra de coral atribuíble a los cambios en el pH del suelo. Ahora luce claro que no es debido *per se* a los cambios en el pH; sino que está relacionado a los efectos indirectos del cambio de pH sobre la concentración de materias tóxicas tales como el hierro, aluminio y manganeso en el suelo, y/o a una mejoría general del medio ambiente del suelo por crecimiento de las raíces y actividad de absorción. Esto ha sido dramáticamente revelado por el hecho que la piedra coral rebaja la cantidad de manganeso absorbido por la planta y estimula grandemente la absorción del fósforo, no obstante que la cantidad de fósforo contenido en la piedra coral en sí es insignificante. La División de Suelos de la Universidad, cooperando en éste proyecto, tambien muestra la reducción en aluminio en el suelo de algunas de éstas áreas, así como una marcada reducción in la absorción del hierro por la planta, conforme revelan los análisis espectrográficos por rayos X. Se presentarán los datos que sustentan los diferentes cambios citados y se describirá el programa de Brewer sobre la piedra coral.

Fertilización Aérea en la H. C. & S. Co., *John W. Sakuma*

Un reporte con los resultados sobre las aplicaciones aéreas de fosfatos y nitrógeno sobre los campos irrigados de la H. C. & S. Co., incluyendo distribución, aspectos económicos y comparación con aplicación de regadío.

Manejo a Granel de Fertilizantes, *W. Carroll Duke*

Métodos para el manejo a granel de fertilizantes sólidos y líquidos.

Sumario y Conclusiones, *Dr. M. B. Russell*

■

La American Sugar Establece un Fondo sobre la Automatización

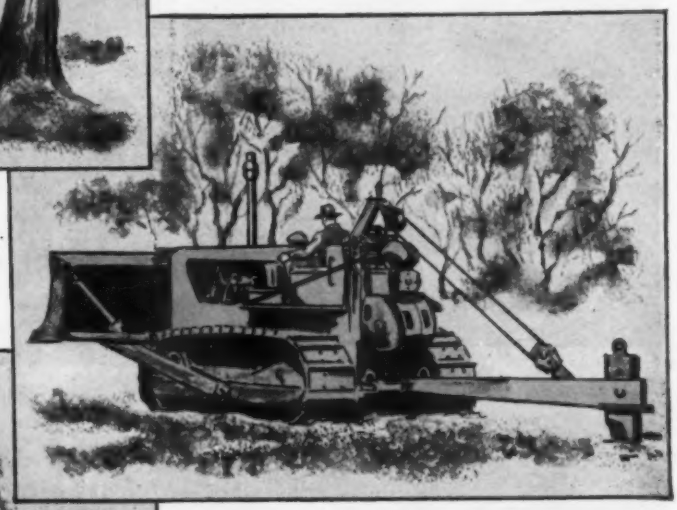
Mediante un contrato por dos años firmado en Octubre 11 entre la American Sugar Refining Company y la Junta de Trabajadores Azucareros, de la Asociación Internacional de Obreros de los Muelles, se crea un fondo destinado a ayudar a los empleados para conseguir otros empleos o iniciar su propio negocio, así como en cursos de re-entrenamiento, si resultan desplazados a causa de la introducción de nueva maquinaria. El fondo ampara a los empleados que hayan trabajado con la Compañía un mínimo de cinco años y les paga hasta 3,700 dólares. El nuevo contrato por dos años se aplica a 800 empleados de la refinería en Brooklyn y a 600 en la planta de Filadelfia. Tambien estipula un aumento del tres y medio porciento en los jornales, efectivo en Octubre primero de 1961; y un segundo aumento adicional por el tres y medio por ciento en Octubre primero de 1962.

Su Distribuidor Caterpillar tiene la mejor selección de

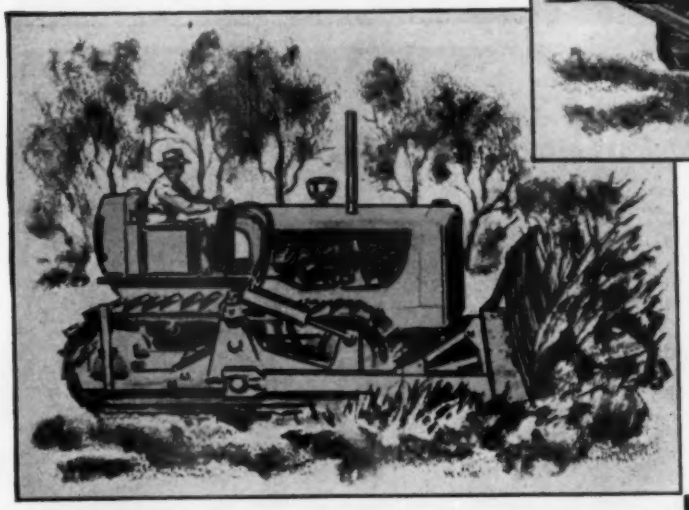
EQUIPO PARA MEJORAR TERRENOS

- Rastras de discos
- Barras portaherramientas
- Bulldozers
- Traíllas
- Implementos especiales para agricultores, taladores, contratistas

La hoja K/G para desmonte taja los árboles, y luego corta los tocones al nivel de la superficie, o más abajo.



O bien, un Tractor Diesel Cat, con Bulldozer y Destroncadora de Tiro, corta las raíces laterales y extrae todo el árbol.



Finalmente, se pasa el rastrillo por la tierra desmontada, y se eliminan las piedras, la broza y las raíces que hay.

CATERPILLAR

Caterpillar y Cat son Marcas Registradas de Caterpillar Tractor Co.

Caterpillar Tractor Co., Oficinas Generales, Peoria, Illinois • Caterpillar Americas Co., Peoria, Illinois • Caterpillar Overseas S.A., Ginebra • Caterpillar of Australia Pty. Ltd., Melbourne • Caterpillar Brasil S.A., São Paulo • Caterpillar Tractor Co. Ltd., Glasgow • Caterpillar of Canada Ltd., Toronto

MEJORE SUS TIERRAS

AUMENTE LA PRODUCCION

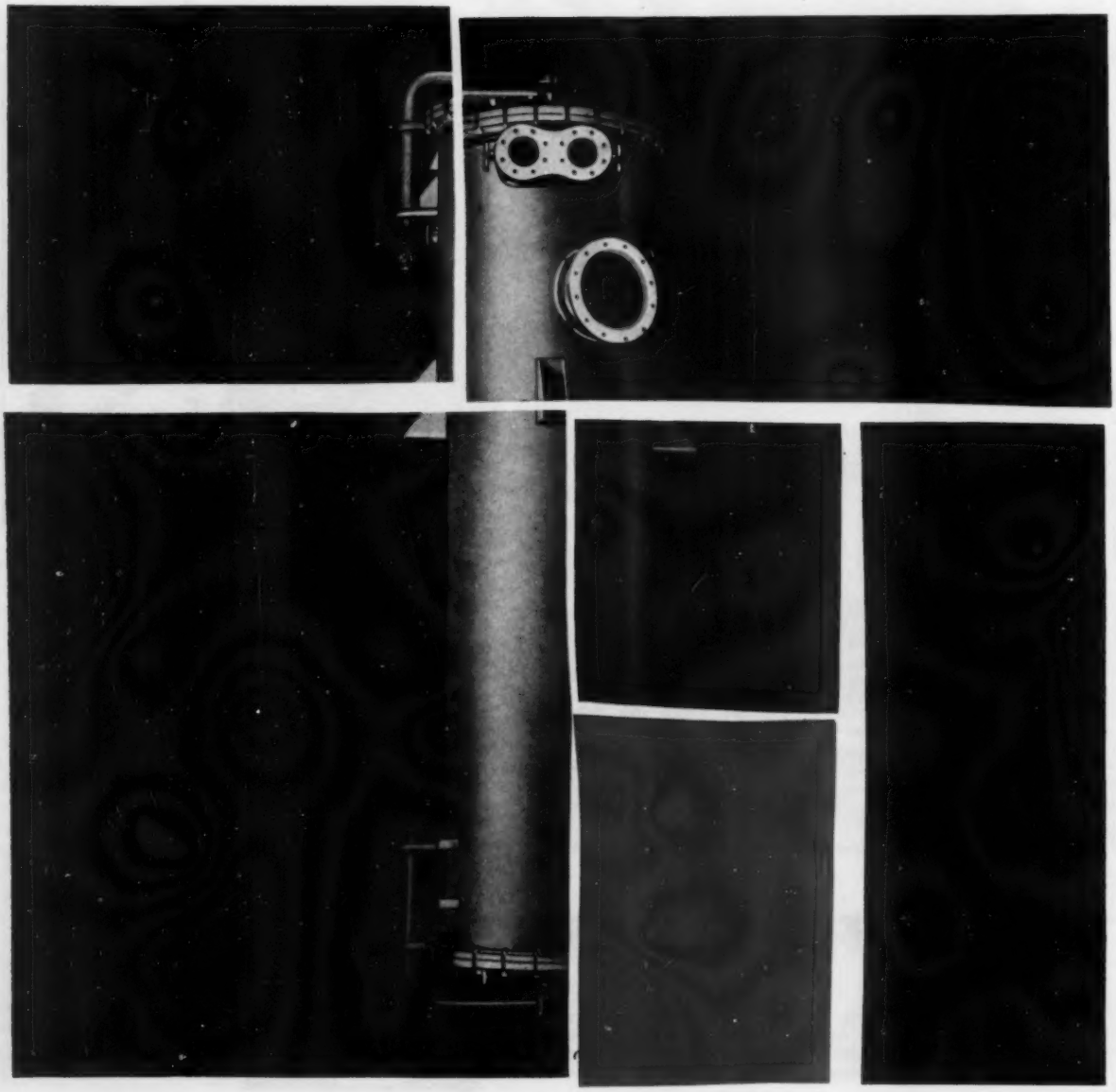
TOME UN CALENTADOR DE JUGO

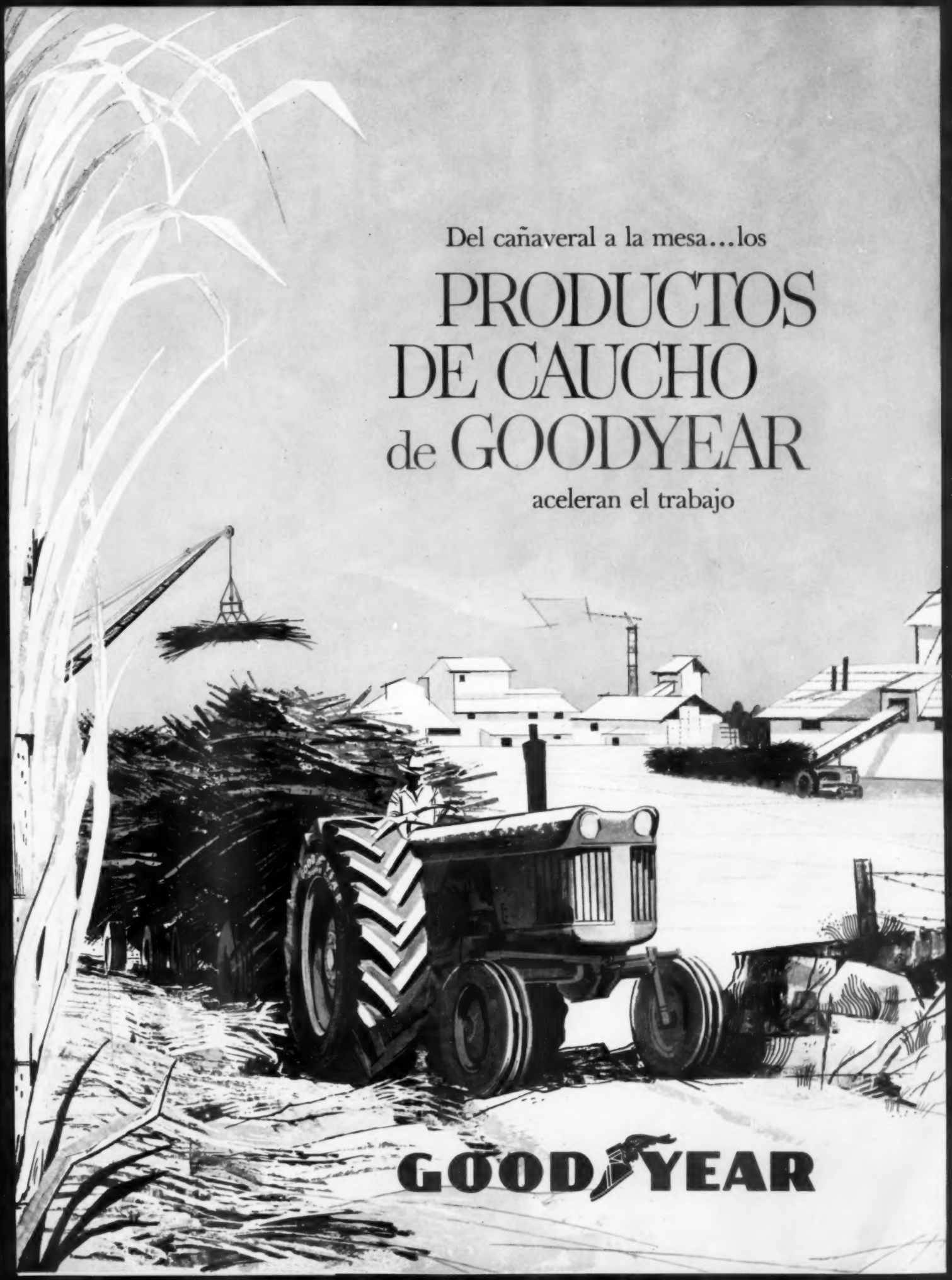
Si fuera posible separar en partes un Calentador de Jugo Craig, sección por sección, se comprobaría que ha sido diseñado por ingenieros de capacidad y gran experiencia. Este equipo ha sido perfeccionado para dar un servicio de entera confianza y para satisfacer las exigencias de las plantas modernas de fabricación de azúcar.

Para duración y servicio especifique usted Maquinaria Azucarera Craig.

Y SEPARELO EN PARTES

A. F. CRAIG & COMPANY LIMITED
Caledonia Engineering Works, Paisley, Escocia
Teléfono: Paisley 2191—Cablegramas: Craig, Paisley
Oficina en Londres: 727 Salisbury House, London Wall, E. C. 2.
Teléfono: National 3964




Del cañaveral a la mesa...los
PRODUCTOS
DE CAUCHO
de GOODYEAR
aceleran el trabajo
GOODYEAR

Todo su trabajo se acelera tremendamente cuando el trabajo manual se reemplaza por Correas Transportadoras de Goodyear. Aceleran el descargue de la caña, el transporte de la misma a los molinos —el cargue del azúcar refinada para su exportación.

Porque para las Correas Transportadoras el transporte de la caña de azúcar misma, más que el azúcar ya ensacada, es el camino hacia la mecanización eficiente de algunos de los ingenios, molinos y refinerías más importantes y productivos a través de la industria azucarera.

Muchos muelles de embarque, por ejemplo, utilizan—casi completamente y a velocidades fantásticas—las Correas Transportadoras de Goodyear para el cargue del azúcar.

En uno de tales muelles se carga azúcar a granel a razón de ¡650 tons. por hora! Un vapor de 10.000 tons. se carga ahora en menos de 2 días . . . trabajo éste que, cuando era manual, demoraba tres semanas.

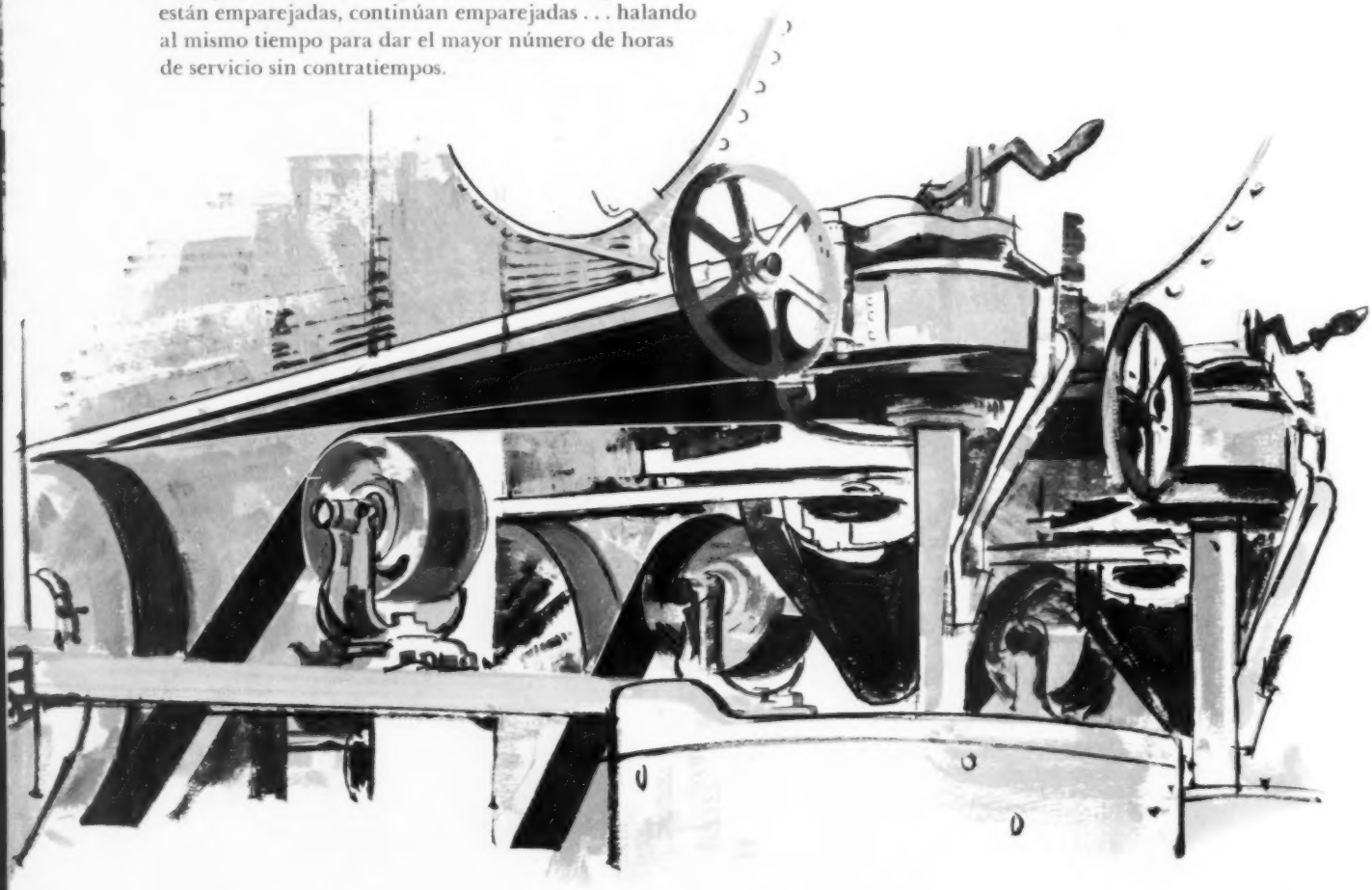
Para enjaezar todos los caballos de fuerza de los tractores modernos—y ponerlos a trabajar para acelerar la tarea—usted necesita llantas como las SPECIAL SURE-GRIP, de "profunda dimensión".

Estas llantas sobresalientes utilizan sus barras más profundas y más rectas para proveer tracción donde otras llantas fallan. Su acción agarradora, a modo de cuña, le permite realizar *más* trabajo en *menos* tiempo—con *menos* gasto de combustible.

¡Y las llantas SPECIAL SURE-GRIP son increíblemente fuertes! Esto se debe a que son construidas con la Cuerda 3T exclusiva de Goodyear, la cual es procesada bajo un control preciso de Tensión, Temperatura y Tiempo. Es esto su mejor protección contra agrietamientos, magulladuras y deslices del aro.

Sume usted todas estas ventajas y le será fácil apreciar el ahorro que—tanto en tiempo como en dinero—unas llantas como éstas pueden brindar en cualquier plantación.

Zafra tras zafra, en las centrífugas de los molinos más importantes, las Correas de Transmisión COMPASS de Goodyear rinden un servicio mejor y duran más que las correas ordinarias.
Las correas que se ven aquí, por ejemplo, duraron de 2 a 3 cosechas sin la menor falla . . . reduciendo los costos a casi una tercera parte.
Las Correas en "V" de Goodyear rinden igualmente un servicio excelente en las cortadoras y otras unidades del equipo. Las correas que "hacen juego" o que están emparejadas, continúan emparejadas . . . halando al mismo tiempo para dar el mayor número de horas de servicio sin contratiempos.



¡Recuerde! cada uno de los productos industriales de caucho descritos en estas páginas son construidos con la maestría propia de Goodyear, sinónimo de CALIDAD. No solamente son mejores sino que duran más, con menos reparaciones y al más bajo costo total.

Para una información más completa sobre cualquiera de estos productos, que representan ahorros, ganancias y mecanización en la industria azucarera, comuníquese con la oficina de Goodyear más cercana o escriba a: Goodyear International Corporation, Akron 16, Ohio, U.S.A.

Los Productos Goodyear se fabrican en: Alemania, Argentina, Australia, Brasil, Canadá, Colombia, Escocia, Estados Unidos de América, Filipinas, Francia, India, Indonesia, Inglaterra, Irlanda, Japón, Luxemburgo, Méjico, Nueva Zelandia, Perú, Suecia, Unión Sudafricana, Venezuela—y se venden por medio de Representantes, Sucursales y Distribuidores en todo el mundo.

GOODYEAR

Sure-Grip, Compass—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio, U. S. A.

Se encuentran en uso varios tipos de cosechadoras mecánicas. Este modelo experimental corta y carga la caña sobre un transporte anexo.

La caña cortada por una máquina diseñada en la HSPA, es cargada sobre un remolque Hilo, por medio de un equipo pesado con garfios para agarrar.

Frontis Cambiante de la Industria Azucarera Hawaiiana

por Roy J. Leffingwell*

La industria azucarera Hawaiiana se ha hecho Internacional. Desde hace tiempo ha tenido sus valores en centrales Filipinos y ha suministrado maquinaria azucarera alrededor de todo el mundo; pero actualmente tiene nuevos y mucho más esparcidos intereses.

Ni siquiera los principales de los "Cinco Grandes," como así llaman a las cinco mayores organizaciones de Hawaii, pueden decirle a uno, específicamente, hacia donde se orientan, porque ésta es una aventura exploratoria. Jamás nadie había intentado una búsqueda tan amplia de oportunidades para el azúcar.

Detrás del apremio por diversificar y expansionar hácia nuevas áreas, está el positivo y científico saber-cómo desarrollado y perfeccionado por la industria azucarera Hawaiiana. Este conocimiento se ha derivado de la inversión en investigaciones de grandes sumas de dinero ganado duramente—desde 1895. El programa de investigaciones de Hawaii ha sido rápidamente ampliado y actualmente se gastan más de dos millones de dólares cada año en la búsqueda de nuevos conocimientos sobre cómo producir azúcar más eficientemente.

Apesar del éxito incuestionable de las investigaciones realizadas sobre la producción azucarera, la industria Hawaiiana no se ha beneficiado en la medida que merece, debido a problemas laborales y por haber sido atrapada por un lazo del mercado.

Las uniones raras veces han podido alistar y reclutar a los obreros agrícolas. Las masas de trabajadores del campo son ambulantes y se mueven segun las cosechas. Aún en el territorio continental de los EE.UU., ha habido pocos intentos con éxito para sindicalizar a los trabajadores agrícolas. Pero en Hawaii las cosechas duran de nueve a once meses al año, por largo tiempo ha habido escasez de personal y los trabajadores del campo tienen trabajo todo el año. Se han importado obreros de las Islas Portuguesas, de China, del Japón, de las Filipinas y de otras áreas para la producción azucarera. Cuando las compañías azucareras tienen hechas tales inversiones en mano de obra quedan sujetas a los obreros.

Teniendo trabajo todo el año las uniones encuentran las condiciones favorables para penetrar. Y así lo hicieron en 1946. En sólo cuestión de semanas todos, salvo una pequeña parte de los trabajadores, eran miembros de la unión. La situación ha cambiado poco desde entonces.

La unión no solamente ha obligado a pagar alrededor de seis veces más los jornales de 1946; sino que las huelgas y las paradas en el trabajo probablemente han costado mucho más a la industria. A las empresas azucareras les ha sido posible subsistir gracias solamente a vastos perfeccionamientos tecnológicos, que han incrementado la productividad de los trabajadores varias veces. Como un ejemplo de tal

(*Signe en la página* 91)

Toda el azúcar crudo que se produce en Hawaii se maneja a granel. Camiones especiales a granel transportan el azúcar a cinco terminales de almacenaje y embarque, situadas en puertos de las Islas. Buques de carga a granel pueden cargar más de 16,000 toneladas cada uno.

*Con anterioridad a la apertura de su propia oficina consultiva en Honolulu, en 1957; el autor encabezó durante once anos el departamento de relaciones públicas de la Asociación Hawaiiana de Productores de Azúcar.

Diversificación e Internacion

Objetivos de las Cinc

IMPORTANTES cambios están desarrollándose en las grandes empresas azucareras de Hawaii—conocidas generalmente como las "Cinco Grandes." Aunque el azúcar se ha escapado como la máxima fuente comercial remunerativa de las Islas; las empresas que operan la industria azucarera nó. Estas firmas crecen mediante diversificación y sangre nueva en la administración.

AMERICAN FACTORS, LTD. es la más nueva de éstas empresas y nó obstante, la más diversificada. Aunque su abolengo procede desde 1849, la Amfac nació en 1918, como consecuencia de la adjudicación de H. Hackfeld & Co. despues de la Guerra Mundial I.

Las operaciones azucareras y sobre otras mercancías se heredaron de la citada firma Alemana; pero desde aquel momento todo cambió. Amfac es la primera de las Cinco Grandes empresas en tener extendido, con bastante amplitud, el dominio de su propiedad en acciones, y la primera con una administración profesional.

Las áreas básicas de actividad de la Amfac son las ventas al por mayor, al detalle, azúcar y seguros. Son los mayores productores de azúcar del archipiélago. Las seis plantaciones azucareras, en las cuales tienen toda o la mayor parte del control y propiedad, producen el treinta por ciento de la zafra de Hawaii.

La American Factors ha ido al campo internacional. En 1959 organizaron la American Factors Associates como consultores azucareros y fomentadores y administradores de propiedades agrícolas. El primer proyecto importante fué una operación nó-azucarera en Australia, conjuntamente con la Chase International Investment Corporation. Este proyecto, actualmente en etapa muy avanzada, tiene por objeto el desarrollo de 1,-300,000 acres en Australia Occidental.

Recientemente la American Factor Associates ha proporcionado servicios consultivos azucareros a Taiwan Sugar Corporation (Formosa) y a varias organizaciones Sur Americanas. Otros proyectos de trascendencia probablemente se iniciarán pronto.

El año pasado Amfac contribuyó a la fundación de Azúcar Internacional, una aventura conjunta de negocios integrada por American Factors Associates, Hawaiian Dredging & Construction Company y J. H. Pomercy & Co. Estas firmas asociadas están interesadas en el diseño, construcción y operación de cualquier sector de la industria azucarera, a través de todo el mundo.

El comercio es la actividad mayor de la Amfac. Asciende a unos 62 millones de dólares al año. El año pasado la compañía alcanzó el 26o. lugar entre los comerciantes al por mayor de los EE.UU. con ventas por cuarenta y seis y medio millones.

La Amfac opera el mayor grupo de tiendas por departmentos en las Islas; y tambien poseen la mayor agencia de seguros en general de Honolulu.

American Factors es grande y financieramente fuerte. Probablemente será un factor positivo en el campo azucarero internacional.

C. BREWER & CO., LTD. es el segundo productor de azúcar de Hawaii. Es el más antiguo de los Cinco Grandes y el único casi dedicado exclusivamente al azúcar. La firma tiene 135 años de fundada; sin embargo es una de las organizaciones azucareras más transformadas.

La primer aventura extranjera de Brewer fué en 1959, cuando su alta reputación como productores de azúcar les condujo a un subcontrato para una nueva explotación azucarera en la provincia de Khuzestan, en el Irán. Unos 13,000 acres de tierras de desecho situados en el Río Dez se sembraron de caña, construyendose un central azucarero y una refinería. Posteriormente Brewer fué promovida a la posición de primeros contratistas con el Gobierno de Irán, que respalda la instalación. La primer cosecha, estimada en unas 23,000 toneladas de azúcar, será recogida éste año.

La segunda empresa extranjera de Brewer fué un contrato por diez años para administrar una plantación azucarera de 23,-000 acres, propiedad de la Sociedad Agrícola e Industrial, del Ecuador. La producción estimada para éste año es alrededor de 70,000 toneladas. El objetivo es promover y levantar los rendimientos por medio del uso de los métodos tecnológicos avanzados de Hawaii.

Recientemente Brewer compró la Fajardo Eastern Sugar Association, de Puerto Rico. Estas propiedades incluyen cinco centrales azucareros, una refinería, tierras y otros activos. Se pagaron alrededor de quince millones de dólares y las operaciones se ejecutarán por medio de una empresa subsidiaria de su entera propiedad—Brewer Puerto Rico, Inc. Se han hecho planes para un centro de investigaciones, un departamento de entrenamiento tecnológico y un programa de expansión por tres millones.

La producción de Brewer en Puerto Rico para 1961 es alrededor de 165,000 toneladas de azúcar. Y la producción en Hawaii será alrededor de 300,000 toneladas, en sus diez centrales.

La filosofía de negocios de Brewer en sus operaciones internacionales azucareras es enteramente distinta a la de American Factors. Boyd MacNaughton, Presidente de Brewer, dice: "hemos adoptado la posición de no ir como consultores excepto en los casos en que consideremos que éllo nos permita la administración o la propiedad." La Amfac, en cambio, dá servicios con-

lización; Propósito y
randes Firmas Azucareras

sultivos o administrativos a base de honorarios o de participación, sin incluír lazos a largo plazo en el cargo.

THEO. H. DAVIES & CO., LTD. es el menor de los Cinco Grandes, elaborando unas 100,000 toneladas de azúcar en tres centrales. Pero Davies fué el primero del grupo en aventurarse en el extranjero. Hace cuarenta años Davies adquirió una sucursal en Filipinas a través de la Honolulu Iron Works, la cual está controlada por los accionistas de Davies. (James H. Taboris es actualmente el Presidente de ambas empresas T. H. Davies y Honolulu Iron Works—la cual aún tiene su sucursal en Manila.)

Se conoce a la Honolulu Iron Works a través de todo el mundo como fabricante de equipos azucareros, habiendo construído centrales en numerosos países del mundo. Gran parte de su labor se realiza a través de su sucursal en Nueva York.

Davies entró tambien en las Filipinas, a finales de la década de los treinta, con una oficina sucursal (la Davies del Lejano Oriente), la cual opera como una agencia azucarera y en la venta al por mayor en equipos de aviación, productos químicos, materiales de construcción e ingeniería, petróleo, neumáticos, pinturas, ferretería y tuberías.

Davies fué fundada en 1845 por capital Británico. Funcionó durante algunos años como una sucursal de una firma de Liverpool, Inglaterra, dedicada al comercio y embarques. Teófilo Harris Davies se unió a la firma en 1857 y once años después la compañía adoptó su nombre. La familia Davies aún tiene el control financiero de ésta ultra-conservativa empresa.

Un departamento de buques, la más antigua agencia de Hawaii; y mercancías al por mayor, son otras de las actividades de Davies. Poseen más de la mitad de la Hawaiian-Philippine Sugar Company, en la cual tambien poseen acciones los otros miembros de los Cinco Grandes. Sus oficinas en el Lejano Este son agentes de éstas y otras tres plantaciones azucareras en las Filipinas. La mayor parte de los azúcares procedentes de éstos centrales se venden en la Costa del Este de los EE.UU. a través de la oficina de Davies en Nueva York.

ALEXANDER & BALDWIN, LTD. Todas las empresas de los Cinco Grandes, excepto una, fundaron plantaciones azucareras o al menos las controlaron. La única excepción es Alexander & Baldwin, quienes empezaron en 1900, con su oficina de Honolulu.

A & B fué establecida con el imperio de la isla de Maui encabezado por la Hawaiian Commercial & Sugar Co., controlado por la familia. HC&S Co. es en la actualidad la propiedad azucarera mayor de los Estados Unidos.

A & B ha experimentado numerosos cambios administrativos en los últimos dos años. Son muy ricos y poseen más capital líquido que cualquiera de los otros Cinco Grandes. Más efectivo se espera en breve cuando se termine la completa liquidación de la Honolulu Oil Company. Esta operación puede significar tanto como otros veinte y cinco millones de dólares.

Una gran expansión puede realizarse con tal suma; pero A & B aún no ha mostrado indicaciones hácia donde van. No se mencionan operaciones azucareras en el extranjero—pero tampoco puede descontarse eso como una posibilidad.

A & B ha sido una firma conservativa a través de los años. El último desarrollo realizado hecho a través de la HC&S Co., ha sido una aventura de negocios con Seagram and Sons para construír una planta de elaboración de ron en la Isla de Maui. Esta es la primer instalación comercial importante iniciada en Hawaii para producir licores; pero no es lo bastante grande para absorber mucho de los activos en efectivo de A & B.

Aparecen arriba las oficinas principales de las cinco grandes organizaciones que dirigen y administran la industria azucarera de Hawaii. De izquierda a derecha: American Factors, Ltd.; C. Brewer & Co. Ltd.; Theo H. Davies & Co., Ltd.; Alexander & Baldwin, Ltd.; y Castle & Cooke, Ltd.

CASTLE & COOKE, LTD. es la mayor de las empresas integrantes de los Cinco Grandes; y proporcionalmente, la que está menos involucrada en negocios azucareros.

C & C produjo unas 170,000 toneladas de azúcar en sus tres plantaciones: Ewa Plantation, Kohala y Waialua Companies. Sin embargo, no se ha incluído el azúcar en su actual programa de expansión por la suma de 117 millones.

Castle & Cooke ha incrementado su diversificación desde los finales de la Guerra Mundial II por medio de empresas subsidiarias. Posee intereses actualmente en el cultivo de la piña, terrenos, alimentos del mar, ganado y en los campos manufactureros y de la electrónica.

Frente al agobio de los costos de producción para sus piñas, tanto como para el azúcar; actualmente está explorando, por medio de su subsidiaria la Dole Pineapple Company, realizar sus siembras en Puerto Rico y en Taiwan.

Malcolm MacNaughton, Presidente de Castle & Cooke, comentaba recientemente: "nosotros estimamos que nuestras verdaderas oportunidades para desarrollar y crecer están fuera de éste Estado."

El arte de la filtración con . . .
Auxiliares de Filtración de Diatomita EAGLE-PICHER

Los Auxiliares de Filtración de Diatomita Eagle-Picher, sin sabor ni olor, están disponibles en calidades standard para practicamente todos los trabajos de filtración, desde el agua hasta los brebajes y los antibióticos. Las calidades específicas pueden ser recomendadas a base del tipo y tamaño del material en suspensión, la viscosidad del líquido a filtrarse, la clase de equipo de filtración que se utiliza y la duración de los ciclos de filtración. Existen auxiliares de filtración Eagle-Picher hechos especialmente para llenar sus requerimientos en cuanto a velocidad de flujo y objetivo específico de filtración. Nuestros ingenieros técnicos pueden ayudarle a encontrar la solución adecuada a su problema de filtración. Celebramos la oportunidad de servirles y compartir con ustedes nuestra amplia y diversa experiencia.

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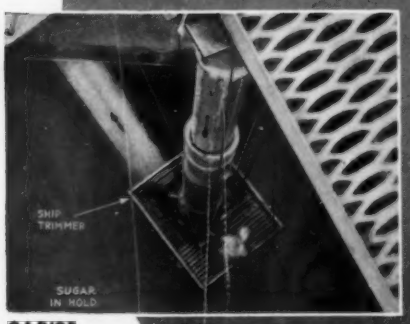
*STEPHENS-ADAMSON REDUCE LOS COSTOS DEL MANEJO DE AZUCAR A GRANEL EN EL MUNDO ENTERO



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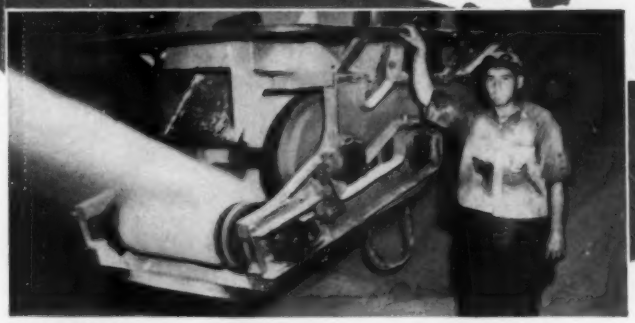

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En el mundo entero se maneja más azúcar a granel con equipo STEPHENS-ADAMSON que con ningún otro. Por más de dos décadas, la pericia ingenieril ha sido la fuerza motivante detrás del puesto a la vanguardia en la industria azucarera que STEPHENS-ADAMSON ocupa.

Este puesto reconocido ha colocado a los ingenieros de STEPHENS-ADAMSON en asociación estrecha con virtualmente cada tipo de problema relacionado con el manejo de azúcar a granel.

Para el almacenaje y la recuperación a granel, así como para la carga y arrumaje de barcos, STEPHENS-ADAMSON reduce los costos del manejo a granel y el tiempo en el muelle a un mínimo . . . Los ingenieros de STEPHENS-ADAMSON pondrán mayores beneficios en su operación del manejo de azúcar a granel. Escriba solicitando amplios detalles.

* *STEPHENS-ADAMSON desarrolló los primeros conjuntos lanzadores centrífugos que revolucionaron el manejo de azúcar a granel. Este principio se utiliza en los Arrumadores de Barcos STEPHENS-ADAMSON que se ilustran más arriba.*

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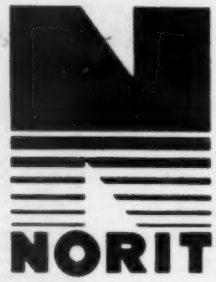

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Frontis Cambiante

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desarrollo está el hecho de que en 1940 cada obrero azucarero Hawaiiano producía anualmente 24 toneladas de azúcar; en tanto que el año pasado cada uno produjo 67 toneladas de azúcar.

Resulta irónico que la industria azucarera de Hawaii compite en costos de producción contra la mano de obra Americana barata. El Departamento de Agricultura de los Estados Unidos relaciona el promedio de las entradas y los beneficios anexos de los trabajadores azucareros Hawaiianos en 1959, ligeramente más de $2.10 por hora. Puerto Rico pagó 50 y ½ centavos por hora y además entre 2 a cuatro centavos por beneficios nó-en-efectivo. Los productores de azúcar de remolacha pagaron menos de 95 centavos por hora y de dos a cuatro centavos por beneficios. Los jornales en Luisiana fueron de 71 centavos por hora más dos a cuatro centavos por beneficios nó-en-efectivo. Los obreros agrícolas en los EE.UU. están exentos del mínimo de $1.25 establecido por la ley.

El mercado para el azúcar de Hawaii ha sido desde hace tiempo un problema debido a la distancia y además a la incertidumbre sobre tal mercado. Los productores consideraron que la forma más segura era poner el azúcar directamente a los consumidores bajo una marca comercial acreditada. Y eso fué lo que la industria azucarera Hawaiiana hizo.

En 1906 se organizó la California & Hawaiian Sugar Refining Corporation, (C & H). Se trata de una cooperativa, de la propiedad de todos los productores de azúcar. La C & H refina y distribuye en el mercado la mayor parte de la producción de las islas.

Esto lucía una buena forma de operar el mercado; y por muchos años funcionó perfectamente. No había super abasto de azúcar en la región occidental de los EE. UU. y la C & H disfrutó de una envidiable posición. Pero los productores de azúcar de remolacha iniciaron una producción amplia en esos mismos Estados. Cosecharon azúcar virtualmente detrás de la misma puerta de sus consumidores. Con la mecanización y mejoras en la eficiencia del proceso, redujeron los costos de operación y mejoraron la calidad.

Bajo el Acta Azucarera de los EE.UU. se adjudica una cuota a cada productor de azúcar Americano. No se permite la entrada en el país más que al azúcar requerida para satisfacer el mercado. Sin embargo, no existe distribución respecto a las zonas en que los productores pueden vender sus azúcares. Como el azúcar es un artículo de consumo pesado y los costos de fletes son elevados, el productor que puede vender su azúcar en mercados cerca de su refinería o de su planta de remolacha, gana dinero. Pero si el refinador se vé forzado a embarcar a mercados situados a largas distancias, sufre una gran reducción en sus utilidades.

Esta es la realidad económica que ha atrapado a la C & H y a los productores de azúcar de remolacha en la mitad occidental de los Estados Unidos. Hay considerablemente más cantidad de azúcar de remolacha y Hawaiiana en dicha área que la que puede consumirse. El productor que tenga que embarcar azúcares a Chicago u otras áreas del medio-Oeste tiene que sufrir una pérdida. En consecuencia, la competencia es feroz para las ventas locales en el Oeste. Todo ésto ha conducido a rebajas en el precio, presupuestos extraordinarios de anuncios y numerosos otros gastos. En resúmen, una reducción en los ingresos de Hawaii. La C & H estima que éste año sus ingresos serán cuatro y medio millones de dólares menos que el pasado; como resultado de la competencia remolachera. Y el futuro no ofrece estímulo e incentivos.

La industria Hawaiiana no está hablando acerca de los pasos que pudiera tomar para mejorar su posición en el mercado. Sin embargo, uno que pudiera decidirse sería desechar la idea de vender sus azúcares a los consumidores, y entrar en el mercado de crudos. Esto envolvería una revocación completa de su política; con la venta o disposición de las vastas operaciones que realiza la C & H, incluyendo la refinería de azúcar de caña mayor de los Estados Unidos. Todo éllo constituiría una decisión suprema; pero no descartada por completo dentro de las posibilidades a largo plazo.

Nueva Válvula de Compuerta que Reduce los Costos de Reemplazo

Fabricada con Cuñas Sólidas para Resistir la Abrasión . . .
Fabricada con Bronce para Resistir la Corrosión

Las nuevas válvulas de compuerta R-P&C están fabricadas de acuerdo con las más altas normas de ingeniería para resolver los problemas especiales de válvulas en la industria azucarera. Estas válvulas tienen cuñas sólidas y paredes extra-gruesas para hacerlas excepcionalmente fuertes y extraordinariamente resistentes a la acción abrasiva de los flúidos. El bronce empleado en las válvulas R-P&C es una aleación de metales de alta calidad, extremadamente resistente a los efectos corrosivos de los ácidos del azúcar en las tuberías.

La durabilidad y resistencia a la corrosión de estas válvulas pueden evitar interrupciones en la producción, y reducen los costos de manutención y reemplazo. Visite a su distribuidor hoy mismo y cerciórese cómo las válvulas de compuerta R-P&C en bronce pueden ahorrarle dinero.

R-P&C abarca un surtido completo de válvulas de compuerta, de globo, angulares y de retención fabricadas en bronce, hierro fundido o forjado en una amplia variedad de tamaños y estilos . . . y para toda clase de presiones. Además R-P&C ofrece productos especiales como válvulas de compuerta Lubrotite, grifos con prensaestopas de asbesto, accesorios de acero fundido y válvulas de acero fundido de cierre sellado a presión. Escriba a la dirección de abajo para más informes.

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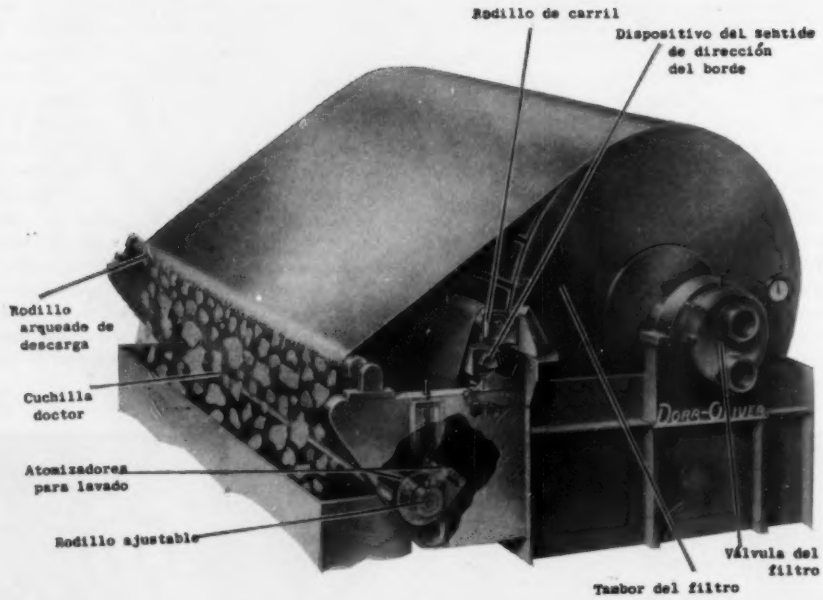

Nuevo tipo de Filtro de Tambor Rotatorio al Vacío construído actualmente por la Dorr-Oliver Incorporated.

La Dorr-Oliver Presenta un Nuevo Filtro

La Dorr-Oliver Incorporated anuncia una nueva versión del básico Filtro Rotatorio al Vacío para Cachaza Oliver, usados en las industrias de caña y de remolacha. El nuevo modelo proporciona tela contínua hidrostática con retrolavado, habiendo sido diseñado para producir filtrados de elevada claridad de las cachazas, que propenden a tupir la tela. El medio filtrante Webtrol pasa sobre un rodillo de descarga arqueado que elimina las arrugas extendiendo el tejido y provee la separación inicial de la torta para su descarga. A lo anterior sigue el rodillo ajustable de lavado en el cual la tela queda sometida a atomizadores con chorros de alta velocidad y por un lavado hidrostático para la eliminación total de los sólidos en la superficie. Finalmente, el medio filtrante ya limpio corre sobre un rodillo de carril que está suspendido, do modo que mueve la banda y cambia la dirección de su recorrido cada vez que el dispositivo del sentido de dirección del borde indica un desalineamiento.

■

Planes para una Estación Experimental en el Brasil

La Asociación de Propietarios de Centrales Azucareros de Pernambuco, Brasil, invitó al Dr. Pieter Honig a visitar sus plantaciones, acompañado por técnicos Brasileros de la Estación Experimental en Curado, la Comisión Contra Pestes de la Caña y el Instituto Agrícola Septentrional. El Dr. Honig estima que Pernambuco debe seleccionar las variedades de caña capaces de satisfacer las condiciones locales de topografía, estructura física de los suelos, disponibilidad de agua y fertilidad. Sin la adecuada selección de variedades los rendimientos fluctúan demasiado. El "*Brasil Acucareiro*" dice que resulta altamente conveniente establecer una nueva estación experimental especial para el desarrollo de las variedades de caña adecuadas. El trabajo de la nueva estación puede desarrollarse en colaboración con otros centros científicos existentes en la región citada del Brasil.

Aumento de Producción del Central Dessalines

Se ha logrado un aumento substancial en la producción azucarera de ésta planta azucarera mediante la compra por el Gobierno de Haití, a través del Banco del Estado Haitiano, de las acciones de la Compagnie Sucriere Cubano-Haitienne, y la reorganización del personal administrativo. Desde el año 1958 el Gobierno ha actuado para proteger a los cultivadores de caña independientes que abastecen al Central Dessalines, en Les Cayes, Haití. El central fué diseñado originalmente para moler 1,000 toneladas de caña al día; pero dicha tarea nunca se alcanzó. Bajo la nueva administración suministrada por el Instituto Haitiano de Agricultura y Crédito Industrial, la producción para el año 1958 fué aumentada a 8,150 toneladas cortas, desde 3,250 toneladas el año anterior. En 1959 la producción alcanzó una cifra anual de 10,450 toneladas y en 1960 13,750 toneladas de azúcar. Se hacen planes para una expansión adicional, estimulados por la oportunidad de poder vender mayores cantidades de azúcar en el mercado de los Estados Unidos.

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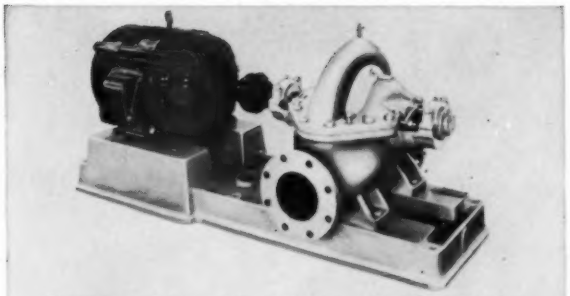
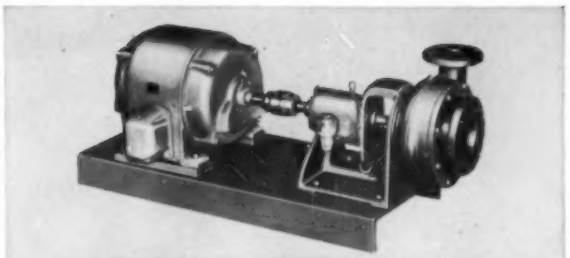
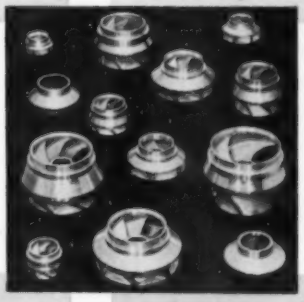


Línea L—Estas bombas de doble aspiración de corte horizontal permiten la fácil remoción del rotor sin molestar la tubería de conexión. Los anillos de desgaste y los collares del eje son reemplazables.

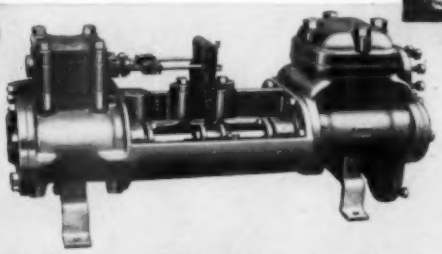


Línea SESC—Estas eficientes bombas impelentes de corte vertical o cerradas tienen un buen número de piezas intercambiables. Pueden obtenerse todas de hierro o de bronce, con accesorios estándard, o del material anticorrosivo Worthite (aleación de acero con alto porcentaje de níquel, cromo y molibdeno).

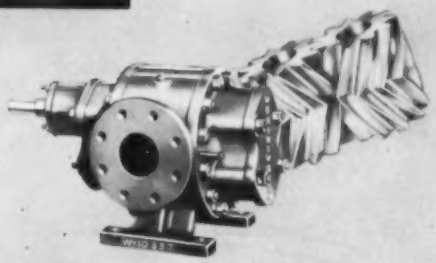
Línea FL—Con conexiones de descarga de 3 y 8 pulgadas, las bombas inobstruíbles de dos paletas de la línea FL pueden obtenerse con diferentes ubicaciones para las boquillas de descarga. Las hay verticales y horizontales, para bombeos de pozos de toda clase.



Línea UHF—La nueva línea de bombas de turbina vertical de Caudal Ultra-Elevado incluye 36 tipos de impulsores de diferente diseño. Se distingue por las altas eficiencias desarrolladas en una extensa gama de condiciones de operación, lo cual ahorra en costos de potencia. De lubricación por agua o aceite.



Línea VA-VC—Estas bombas de vapor duplex de placa de casco obturador y válvula de doble acción son construídas para una extensa gama de presiones de vapor y de líquidos. Llevan forros removibles. Pueden también obtenerse con accesorios de acero endurecido y válvulas esféricas.



Línea GR—Diseñada para el bombeo de aceites lubricantes y líquidos viscosos, estas bombas rotativas de engranajes helicoidales se recomiendan para trabajos pesados.

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para todo requerimiento de bombeo de Central Azucarera

Las seis líneas de bombas aquí ilustradas son las bombas Worthington más útiles para Centrales Azucareras. Su gran seguridad, eficiencia y larga duración están respaldadas por años y años de investigación y perfeccionamiento continuos.

Para más informes sobre estas bombas Worthington y sus aplicaciones a la industria azucarera, comuníquese con el distribuidor local más cercano, o escriba a Worthington Corporation, Sección 108-32S, Harrison, New Jersey, U.S.A.

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DICALITE® TECHNICAL REPORT

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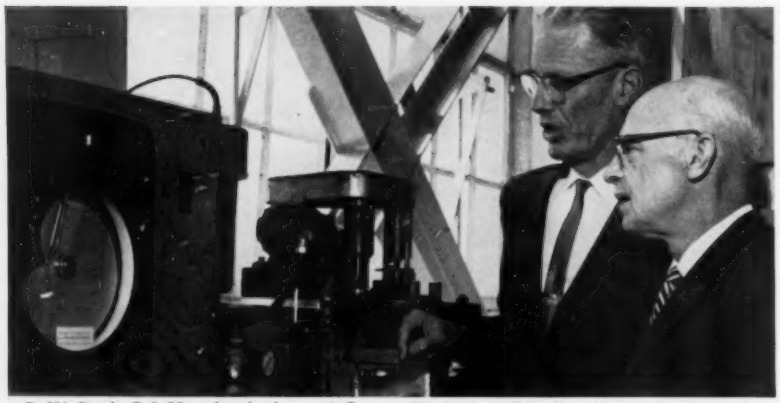
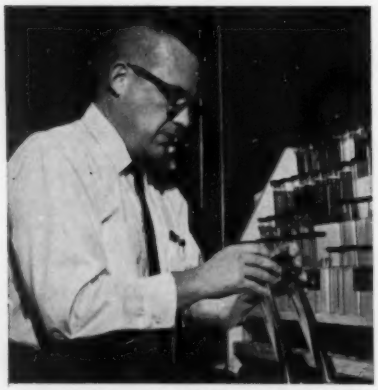
Dicalite Filteraid Usage at C & H Sugar



C. W. Beal, C & H technologist, and George W. Bregar, Dicalite, discuss the operation of the variable pressure filter used in the C & H laboratory to evaluate the performance of filteraids.

Among the many sugar refineries who employ Dicalite in filtration, the California and Hawaiian Sugar Refinery Corporation has a high place in our regard, for they have been purchasing Dicalite for more than 30 years.

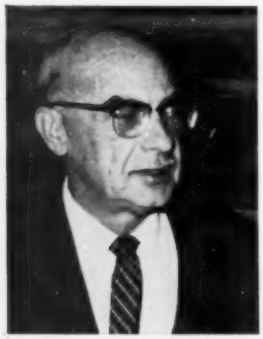
C & H, the refining and marketing organization for all the sugar producers in Hawaii, markets in 27 states, and is recognized as a leader in the industry. Their refinery at Crockett, on San Francisco bay, is the largest single refinery in the world, producing nearly 800,000 tons of finished sugars a year.



J. L. Meikle, C & H Superintendent-Process, checks the clarity of Sweetland-filtered char decolorized sugar liquors.

In this refinery, Dicalite filteraids are used in the clarification of washed raw sugar liquor and bone char decolorized liquors. Sweetland filters are precoated with Dicalite Speedplus,® using 0.3 lbs/ft^2 of filter area. Dicalite Speedplus is used for the body feed, in amounts carefully regulated to the characteristics of the particular batch of sugar liquor. Throughput averages 10 gal/hr/ft^2 of filter area on decolorized liquors.

Though the washed raw filtration is probably the most important in the refining of cane sugars, many refineries make profitable use of Dicalite in the filtration of high raw remelt sugar liquors and affination syrups. A Dicalite service engineer will be glad to discuss with you the possible advantages of Dicalite filtration in your individual refining process. Write: Dicalite Department, 612 So. Flower St., Los Angeles 17, Calif.



George W. Bregar

Dicalite's "Man on the Spot"

George Bregar joined the Dicalite Technical Department in 1945. For 6 years his efforts were devoted primarily to research and product development, with additional work on quality control, customer service and field testing. George's research on diatomite processing paid off in a U.S. patent, which was assigned to Great Lakes Carbon Corporation.

Since 1951, Bregar has been serving Dicalite users in the San Francisco Bay area and in the Northwest.

Before joining Great Lakes Carbon, George had 15 years experience in metallurgical and mineralogical work, the last 4 with the U.S. Bureau of Mines. Here he developed analytical methods for spectrographic determinations and other analyses of strategic ores. He majored in chemistry at Geneva College.

Bregar is a member of the Master Brewers Association of America, the California Laundry and Drycleaners Association, and the American Society of Sugar Beet Technologists. He is also associated with the American Society of Enologists.

TECHNICAL LITERATURE

on Dicalite Filteraids is available on request. Bulletin B-14 discusses the principles and operating practices of filteraid filtration, and its applications in many industries. Write for your copy to Dicalite Dept., 612 So. Flower St., Los Angeles 17, Calif.

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